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B.T.C. Report Forecasts

VARIOUS indications have been given in recent months that the 1951 accounts of the British Transport Commission may show an operating surplus. Without committing himself to precise details, Lord Hurcomb forecast to the Mansion House Association on Transport on March 28 that the trading accounts for the past year would reflect progress in all branches of the organisation. Publication of the report and accounts is not expected for a month, but by the time of the debate on passenger fare increases in the House of Commons on April 28, Sir David Maxwell Fyfe (speaking in the absence through illness of the then Minister of Transport, Mr. J. S. Maclay) was able to state that despite earlier forecasts of a deficit during the hearing of the passenger charges scheme before the Transport Tribunal, it seemed that there would not be a deficit at all. Last weekend two Sunday newspapers published figures purporting to show certain of the Commission's results for 1951, the source of which would seem to be preliminary information similar to that on which Sir David Maxwell Fyfe's remarks were based. According to these reports the Commission's overall surplus for 1951 amounted to £2,900,000. Capital charges and various special items are expected to take £2,700,000 and £100,000 respectively, which would leave £100,000 to set against the accumulated deficit of £39,577,369. This would be a particularly satisfactory situation in that the passenger fares scheme was not in force during the period under review. The figures would point, therefore, to considerable progress in economies due to unification and pooling of services such as we referred to in our May 16 issue when dealing with the widespread fallacy that the Commission's railway services are operating at a loss. Apart from these and other savings, one of the weekend forecasts of the B.T.C. report suggested that there had been an increase in railway traffic receipts of over £8 million. We have already given our opinion that even better results may be expected for 1952, and figures quoted in our April 18 issue of traffic flow through marshalling yards and clearance of steel traffic in the winter months of this year show encouraging signs.

Crown Agents for the Colonies

ALTHOUGH some aspects of the work of the Crown Agents for the Colonies are very well known to Colonial railway administrators and to railway engineering supply contractors in this country the full scope of their operations is appreciated by very few. Mr. Archibald Campbell, who is Chief Mechanical Engineer to the Crown Agents, was able to fill many gaps in the knowledge of his hearers when he addressed members of the Transportation Club last week. He explained that the history of the Crown Agents goes back for nearly 120 years, that it is a cross between a business house and a Government department, and that the staff of the Crown Agents are not civil servants. Moreover, the office has never cost the British taxpayer anything. In 1951 the c.i.f. value of supplies which the Crown Agents ship to their principals was £45 millions. Those supplies ranged from heavy engineering products to stamps. Mr. Campbell has done a good deal during his 38 years with the Crown Agents to assist in the development of Colonial railways, particularly those in Africa, and he has played an important part in the preliminary work which is now leading to a wider measure of standardisation on those railways. He believes that a period of expansion of the Colonial railways is now due to begin, and in some extracts from his address given elsewhere in this issue, he points out that these railways now have locomotives and rolling stock which are second to none.

South African Coal Haulage

COAL was nearly 37 per cent. of the tonnage of traffic moved by the South African Railways during the financial year 1950-51. The total rose to 23,103,230 tons, 1,454,305 tons more than in 1949-50. Since 1940-41 there has been a marked increase in the demand for coal transport, and the tonnage hauled annually has since increased by 8,168,773, or 55 per cent. During the twelve months ended December 31, 1951, the S.A.R. carried 23,069,944 tons of coal, 852,024 more than in 1950. On the basis of train loads, the Administration operated about 15,000 more coal trains last year than in 1941. In making known these figures, Mr. P. O. Sauer, South African Minister of Transport, said that the suggestion had often been made that the railways should make more use of sea transport to expedite deliveries of coal from the north to places like Cape Town. In the past they had used sea transport to supplement rail transport and were again doing so, but it was neither cheaper nor quicker. Including the time taken to bring the coal by rail to the port of shipment and to load the ship, it took about 21 days from the pithead to Cape Town compared with eight days by rail, and cost 716d. per ton by sea compared with 305d. per rail.

International Basis for European Railways

RATIONALISATION of the European railway system by unification and co-ordination of resources on a pan-European basis is the theme of a recent article by Monsieur Louis Armand, Director General of the French National Railways, in the Paris *Revue Politique et Parlementaire*. He stresses the advantages of long hauls unhampered by frontiers and of the scope for co-operation between railways, as in the Association of American Railroads, within the wide territory of the U.S.A. Whilst admitting the high technical efficiency of European railways and the usefulness of the International Union of Railways

and other international railway organisations in Europe, he urges enlargement of co-operative activities and a more forward and constructive policy in combined action. In the operating sphere, Monsieur Armand advocates pooling of wagons on the lines of the existing Franco-German (Europ) pool or of Interfrigo, with a European Wagon Office. In mechanical engineering, he presses for international standardisation, with a reminder of the possibilities of standardisation among rolling stock builders and of standardised electrification, regarding which latter he is perhaps optimistic.

Overseas Railway Traffics

SOUTH African Railways traffics, which ended the financial year 1951-52 with a £9,924,607 improvement to £99,762,479, have continued to advance in the four weeks since March 31. Considerable increases were shown in the first week, when receipts were £86,799 higher, and in week four, the latest for which receipts are available, when traffics were higher by £169,338 at £2,037,856. As a result of these advances, aggregate receipts at April 26 were up by £385,987 at £7,398,439. Antofagasta (Chili) & Bolivia traffics, which had continued to improve during 1952, fell by £15,160 to £137,110 in the week ended May 9, and brought the aggregate increase for the year down to £885,460 at £2,909,970. During the following week, though, receipts were £33,390 above those for the equivalent period of 1951, and amounted to £166,570. During April, the first month of the financial year 1952-53, Barsi Light Railway receipts, which had made a considerable aggregate improvement in the previous year, fell by £2,970 to £37,260.

Meeting the C.N.R. Competitors

THOUGH growing competition from other forms of transport was one of the greatest problems facing the railways, there was no cause for defeatism, Mr. Donald Gordon, Chairman & President, Canadian National Railways, told the C.N.R. Inter-departmental Educational Association. Pipelines were a relatively new development, and there were conditions under which railways could not compete with them. Airlines were making " rather alarming inroads " into the first class passenger business of the C.N.R., and they had to recognise that the airlines were supreme in speed. Buses and lorries continued their competition, with advantages in flexibility and small-scale operations. The railways were prepared to meet this competition. They could offer safer and more comfortable journeys, and they would continue to be prime movers of the nation's freight, for no other carrier could move so much so far, for so little. They would have to exercise all their ingenuity and resources, he warned, to stop the road haulier from carrying off the richest prizes. They had to show that they deserved patronage because they could offer a better service or a better rate, or a more attractive combination of both. The C.N.R. recapitalisation plan, expected to come into operation soon, would " clean the windows of our financial house," said Mr. Gordon. Once the legacy of excessive debt had been lifted from their shoulders, they would be judged on their merits.

Competition in the Air

HAVING raised the speed of their principal services to the maximum practicable with piston-engine aircraft, the air transport undertakings are concentrating on ancillary attractions to win traffic from each other and from surface travel. On June 9 British European Airways will introduce a midday " Silver Wing " flight to Paris by new " Elizabethan " aircraft, on which a hot luncheon with champagne will be included in the return fare of £15 19s. The present London-Paris first class return *via* Dover-Calais costs £14 6s. 8d. without meals, drinks or the free cigarettes that will be offered to air travellers according to the B.E.A. announcement, and the " Golden Arrow " passenger pays a supplement of £1 7s. 2d. each way on top of this. There are many, of course, who genuinely prefer the surface route, but B.E.A. has presented a strong inducement to others, particularly when the journey time throughout from Kensington Air Station to Paris Gare des Invalides is only 3 hr. 10 min., of which 80 min. are spent in the air. The innovation of a hot lunch on so short a flight has become practicable by developing electrically-heated containers for meals cooked in ground kitchens. Certain airline catering methods have been adopted already by railways in the U.S.A. and others may repay study elsewhere.

Locomotive Engineers Summer Meeting

A MOST successful summer meeting of the Institution of Locomotive Engineers was held on May 23, when some 200 members and guests were taken on a conducted tour over the Corby works of Stewarts and Lloyds Limited. Seven main sections were visited, and included the open cast ore mines, where the members saw in operation the new walking drag line. This excavator, the largest of its type in the world, was described and illustrated in our November 23, 1951, issue. Other sections included the ore preparation and Bessemer plant, and open hearth furnaces which operate on a continuous basis, producing some 4,000 tons of high-grade steel a year. The rolling and strip mills, the continuous welding tube plant, producing some 380,000 tons of tubes a year in sizes up to 4 in. nominal bore, and the electric resistance tube welding plant for the manufacture of locomotive boiler and superheater tubes, were also visited. Lunch and tea were provided in the works recreation hall, the visitors being received by Mr. James Mitchell, Director, Corby works. Mr. R. C. Bond, vice-president of the Institution, in the absence of the President, Mr. Julian S. Tritton, expressed the thanks of the visitors for a very enjoyable visit.

The Weedon Derailment

THE derailment at Weedon on September 21, 1951, very naturally aroused great public interest, not only by reason of the damage sustained by the train, resulting in 15 fatalities, but also because the locomotive ran over ¾ mile with its leading bogie wheels off the rails without the enginemen realising that anything was wrong. The report of Lt.-Colonel G. R. S. Wilson, which will be summarised in our columns in due course, has now appeared. In his opinion the initial derailment was brought about by lack of freedom of the axleboxes in the horns. This tightness had been left after the bogie axles had been changed over, following tyre wear on the leading wheels, a practice carried out only on the now London Midland Region lines, without previous failure, but the need for better regulation of this work has been brought out by the accident. The report states that the Railway Executive is considering whether this practice should be adopted generally or discontinued as not worth while. Colonel Wilson sees no inherent reason for objecting to it provided adequate precautions are taken. Standards and methods should be fully and precisely laid down and final compliance with them rests with a member of the supervisory staff. Better methods of taking measurements during the process are under consideration.

Lightweight Diesel Train Experiments

AN indication of the interest with which the Railway Executive is studying new methods of economical working is given by the facilities afforded to A.C.V. Sales Limited for trial runs with a new lightweight diesel train, which began experimental running between Marylebone and Princes Risborough this week. The vehicles comprising this three-car set, illustrated on another page, embody the application to railway service of features selected from bus and coach practice, including power units already in quantity production. A motor coach and trailer of the lightweight stock have a combined length of 80 ft. and weigh only 25 tons, which may be compared with the 30 tons of a normal 60-ft. coach. A standard body construction, with central entrance vestibule, has been adopted for all cars of the demonstration train, but interior arrangements can be varied for particular requirements. Four-wheel cars would be a novelty to most travellers if trains of this type were adopted,

but last week's demonstration run to Gerrards Cross showed that the 22 ft. wheelbase gives sufficiently good riding even on a route with many sharp turnouts and junctions for the type of service and range of speeds in view.

New Beyer-Garratt Locomotives for Benguela Railway

TO supplement motive power employed on the heavy-graded sections, the Benguela Railway has recently placed in service 18 Beyer-Garratt, 4-8-2 + 2-8-4 locomotives having a 13-ton axleload; orders for a further ten have been placed. The new engines are the result of the satisfactory performance under most arduous conditions of the articulated locomotives previously supplied to the railway by this firm, the first of which were delivered in 1926. The locomotives were at that time the most powerful engines built for the 3 ft. 6 in. gauge; a further 14 were supplied in 1929. The new locomotives, which are described and illustrated elsewhere in this issue, are of the same tractive effort as the engines previously supplied to the railway—52,360 lb. at 85 per cent. boiler pressure—but embody many improvements in design to the engine, boiler, tanks, and cab. Throughout the Continent of Africa the increasing development of the economic resources of the territories is resulting in heavier calls on the transport systems. The new locomotives will augment considerably the tractive effort available for traffic which is so rapidly increasing due to extra loads from the Belgian Congo and the Rhodesias.

Debate on Government Transport Policy

MISGIVINGS about the White Paper were expressed by speakers from the Government benches as well as by Opposition members in the House of Commons debate on transport on May 21. A critical speech with a background of long railway experience was made by Sir Ralph Glyn (Conservative Member for Abingdon), who is a former Director of the Caledonian Railway and of the L.M.S.R. He described the proposed use of the levy on road operators for compensating the railways for traffic lost to the roads as "disastrous for the relationship between the road and rail services." Others objected to the levy not only on principle, but from the practical standpoint of the difficulty of deciding the extent to which traffic had been transferred in a particular case and the amount due to the railways as compensation. Mr. Lennox-Boyd, the Minister of Transport, did not deny these difficulties, but he said he thought them not much harder than the obligations laid on the Transport Tribunal by the Socialist Government in the Transport Act. The kind of thing the tribunal would have to consider would be how far rail traffic in any one area had declined in comparison with the general level of national productivity; how far there had been an increase of road traffic in that area; and what evidence there was of actual transfer of contracts from rail to road. It will be recalled that the levy is intended also to offset any loss on the sale of the Road Haulage Executive's undertaking by amortisation. Another purpose was mentioned by Mr. Gurney Braithwaite, Parliamentary Secretary to the Ministry of Transport, in winding up the debate, when he told the House that it would be used to finance the compensation of employees.

Dealing with the future of the Executives, the Minister of Transport said that a result of the Government's proposals would be a lessening of the load on the Railway Executive at headquarters and so it would not be necessary to have a Transport Commission and a Railway Executive exactly as they are now. He suggested a co-ordinating railway authority, possibly on the lines of the old General Managers' Conference. In this respect the plans seem to approach our own proposal in our May 16 issue for a smaller and reorganised Railway Executive, with a reversion to a system of General Managers in the Regions. Details of the new arrangements will be the subject of discussion with all concerned, but the prospect was admitted by the Minister of certain functions of the Hotels Executive and the Docks & Harbours Executive going to the new railway areas. We stressed the desirability of such arrangements in our May 16 issue and this amplification of the sketchy White Paper proposals is satisfactory as far as it goes.

Several speakers in the debate, reported elsewhere this week, discussed decentralisation of railway organisation, with various broad and unsubstantiated assertions about the present railway system having lost its spirit and being too large and remote. Beyond reaffirming the proposal to have a separate Scottish Region—which was criticised by Sir Ralph Glyn—Government spokesmen did not give details of how it was planned to decentralise but promised a debate on the subject when the scheme the B.T.C. has been instructed to prepare is in the hands of the Minister. Other matters elucidated in the debate were that the railways would retain their feeder and delivery services, and that consideration would be given to purchase of road interests by the railways if special cases arose where this might be beneficial. The tone of the debate emphasised the dangers of political interference in railway transport organisation and operation, for there was little evidence of ability on either side to abandon preconceived notions or to examine without prejudice what has been achieved by the transport industry since nationalisation. Mr. Herbert Morrison affirmed the Labour Party's intention, if returned to Parliament with a working majority, to return to public ownership such operable units as were necessary for a co-ordinated transport system.

The New Indian Railways

IN this, the 99th year of Indian railway operation, one of its most sweeping and important developments has been completed, the integration and regrouping of the entire 33,000-mile Government-owned and worked system. This fulfilment of high Indian hopes has been made possible by two events that occurred in April, 1950. One was the inauguration of a new era in Indian railway financial history, the outcome of recommendations by the Convention Committee, accepted by Parliament in 1949, and briefly described in an editorial in our May 23 issue. The other was the completion of acquisition by the Government of India of all railways of any importance in that country, with the taking over in that month of some 6,000 miles of line, formerly owned and worked by Indian sovereign states. The way was thus clear for the fusion and regrouping of 97 per cent. of the railway route-mileage in the Republic to form six new systems each serving a geographical zone.

The regrouping was completed by the inauguration of the Northern, North Eastern, and Eastern Railways on April 14, 1952, exactly a year after the Southern, the first of the new railways, had been initiated. Each of these lines is confined to its own geographical zone, except that a long metre-gauge tentacle of the North Eastern system thrusts right through the middle of the Northern Railway broad-gauge area, from the parent system east of Lucknow *via* Cawnpore to near Agra. There are also two shorter invasions of Northern territory by North Eastern metre-gauge lines, (*a*) from Bareilly to Kasgunj (on the long line just mentioned), and (*b*) from Banaras (Benares) to Allahabad. The long incursion is justified by the necessity for linking up the network of metre-gauge lines west and south-west of Delhi with the long North Eastern line extending from Moradabad to north-eastern Assam. It may be noted that the only two links between the metre-gauge system north of the Ganges and the broad-gauge lines to Calcutta are the wagon-ferries at Mokameh and Manihari Ghats.

The North Eastern administration would seem to be handicapped by having a metre-gauge network stretching for over 1,500 miles. Metre-gauge travelling is not rapid, and, moreover, traffic, and geographical, climatic, and racial conditions in the two halves of this network are quite different. In overcoming such difficulties, there is certainly scope for first-class administration and a conscientious and capable outstation staff of all grades, scattered over so great a distance. The latter remark applies especially to the civil engineering staff, for in Behar, Northern Bengal, and Assam, the lines which it maintains cross many rivers, great and small, debouching from the Himalayas, and these are a great source of anxiety; every year there are floods, breaches,

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damaged bridges, or landslides, and maintenance has to be of a high order. In the formation of the six new railways, however, we recognise an ambitious venture, which, after due consideration, has been judged appropriate in every way for the good of India, and we wish it every success.

Summer Train Services, Western Region

A NOTABLE feature of the Western Region summer service, operative from June 30, is the acceleration of the "Cornish Riviera Express," by 15 min. westbound and 20 min. eastbound. The speed-up is helped by the omission of the Exeter stop in each direction, as is customary in summer, and will bring the time between Paddington and Plymouth down to 4¼ hr. each way. This is still 8 min. longer in the down direction than the 4 hr. 7 min. timing for the same run brought in with the opening of the Westbury cut-off in 1906, and 15 min. longer than the 4 hr. of 1939, but the up timing is within 5 min. of that in force in the summer of 1939. On Mondays and Fridays the down "Limited" will have a relief at 10.20 a.m., running through to Penzance, and on the same days the 9.15 a.m. "all stations" from Penzance to Truro will run through to Paddington as a relief to the up "Limited," the two trains being due in London at 4.25 and 4.30 respectively. The usual greatly expanded West of England service is provided on Saturdays, including the all-sleeping-car 12.20 a.m. from Paddington to Penzance.

On the Bristol main line the principal improvement of any note will be in the running of the up "Merchant Venturer," which is to omit the stops at Swindon and Reading, and to run non-stop from Chippenham to Paddington, arriving at 8 p.m. instead of 8.15 p.m. (2 hr. 35 min. from Bristol). Reading will be served by a slip coach. The "Bristolian" will still take 140 min. in both directions, as compared with the pre-war 105 min., the only faster trains on this service being the 11.45 a.m. from Bristol to Paddington (130 min.) and the 11.15 a.m. and 5.5 p.m. down (137 min.).

On the South Wales service, last summer's 8.40 a.m. express from Paddington to Swansea (relief to the regular 8.55 a.m. train) this year is to be extended to Pembroke Dock; it is to call at Newport, in the fast time of 144 min. from London, whereas last year it was non-stop to Cardiff. Waterford and Cork boat passengers from Paddington this year will be transferred as usual from the 3.55 p.m. express to a 3.45 p.m. relief, but the stops of the latter at Newport and Cardiff will be to pick up passengers only. On Saturdays there will be an hourly service from Paddington to Swansea, with most of the trains continuing to stations further west, from 7.55 a.m. to 3.55 p.m. inclusive; there will be additional South Wales trains at 8.40 and 11.35 a.m., 1.50, 3.45, 5.55 and 6.55 p.m., and a correspondingly intensive service will operate in the reverse direction.

One important express on the Birmingham service is to be speeded up; it is the 7.30 a.m. from Shrewsbury (9 a.m. from Birmingham), accelerated 10 min. in running from Leamington to reach Paddington at 11.10 instead of 11.20 a.m. There is to be no revival this summer of last year's "William Shakespeare," at 10.10 a.m. from Paddington; but the return working, at 8 p.m. from Birmingham (previously 7.50 p.m., and running through the winter on Fridays and Saturdays only), will be reinstated as a daily train, though nameless and without through coaches from Stratford-on-Avon. It will reach London at 10.25 instead of 10.20 p.m. The 7.10 p.m. from Paddington to Birmingham and Wolverhampton also is once again to run daily, instead of on Fridays and Saturdays only.

A considerable alteration is to be made in the working of the daily through restaurant car express between Wolverhampton, Birmingham, Kingswear, and Penzance. This will start at 9.15 instead of 10.35 a.m., call additionally at Gloucester (L.M.R. Eastgate Station), and will slip a coach instead of calling at Taunton. The train will then divide at Exeter instead of Newton Abbot, and the Penzance portion will run non-stop to Plymouth, with the stops at Lostwithiel, Chacewater, Redruth, and Gwinear Road also omitted, so that Penzance will be reached at 5.55 instead of 7.40 p.m., an acceleration of 25 min. (35 min. from Bristol). In future this train will be known as the "Cornishman," and also the corresponding working at 10.30 a.m. (previously 10.35) from Penzance, accelerated 35 min. to Plymouth, 28 min. to Birmingham, and 17 min. to Wolverhampton.

Another interesting cross-country development is the provision of through coaches daily between Newcastle and Cardiff, brought by the 8.15 a.m. Newcastle-Bristol express over the L.M.R. route from Sheffield to Gloucester, and there transferred to a W.R. train, so reaching Cardiff at 4.30 p.m. The return working will leave Cardiff at 8.30 a.m. and reach Newcastle at 4.59 p.m. The time of 8¼ hr. from Newcastle to Cardiff compares with all but 10 hr. by the 9.50 a.m. through Newcastle-Swansea express, which travels *via* Sheffield, Leicester, Banbury, and Swindon. Among the many through trains on Saturdays between all parts of the country and the coast resorts of Devon and Cornwall, a novelty will be through coaches between Newcastle, York, and Newquay.

A new train is to leave Cardiff at 12.35 p.m. for the Torquay branch and for Penzance, and will reach stations in Plymouth and Cornwall at the same time as last year's 11.25 a.m. train, an acceleration of 70 min. An innovation this year will be in the method of reserving places in trains from the Torquay area to Paddington on Saturdays from July 5 to September 13 inclusive. Reservation tickets will be issued without charge, but will not entitle passengers to specific seats; when all the places in an individual train have been allocated, admission to that train will be possible only on production of a reservation ticket overstamped with the train's number. In this way it is hoped to avoid passengers having to stand in corridors in any of these trains.

Finally it may be remarked that in the summer timetable the number of daily slip coaches on the Western Region—the only Region which still continues to practise this once popular operating method—will increase to ten daily; in the down direction one at Princes Risborough, one at Bicester, two at Westbury, and one at Taunton; and in the up direction two at Didcot and three at Reading.

Research Activities of British Railways

DEVELOPMENT of railway equipment can be guided to a great extent in these days by research, which has the advantage of revealing the lines of progress most profitable to follow. Outside observers who sometimes wonder why particular changes in equipment are not undertaken, would often be surprised to know the small advantage they would entail, or the disproportionate cost involved. Mr. T. M. Herbert, Director of Research, the Railway Executive, recently addressed members of the Parliamentary & Scientific Committee at the House of Commons on this subject. He described research as one of the continuing duties of good management, and explained that it was necessary for it to be carried on by the railways themselves because of the special and arduous conditions in which they often employed equipment purchased from industry. In the second place, the bulk of locomotive and rolling stock of British Railways was manufactured in railway workshops to railway designs.

Speaking of the locomotive testing plants at Swindon and Rugby, Mr. Herbert said that the analysis of data on locomotive performance was a laborious and lengthy process, which later might be facilitated by the use of electronic calculating machines. It had been shown already by the more laborious methods now available that many trains might be run more economically in terms of fuel consumption if their speed was increased. He quoted the example of a London to Manchester journey at present booked in 4 hr. 22 min., which involved a calculated coal consumption of 7,387 lb.; this might be reduced by 658 lb. if the timing were cut to 4 hr. Other considerations might prevent the full benefit of higher speed in terms of fuel consumption from being achieved, but it was evident that scientific methods of investigating overall locomotive performance were likely to yield notable results.

On the subject of lightweight rolling stock, Mr. Herbert said that progress in this direction in the United States and Europe had resulted in reducing the weights of typical coaches to about 45 tons and 33 tons respectively, which was about the same as the weight of the new standard British Railways stock, weighing approximately 33 tons. The question arose as to what benefits would be obtained by the large capital expenditure needed to reduce weight still further, and it appeared that while a reduction of four or five tons would give a marginal saving in fuel costs on intensive electrified suburban services where energy consumption was high, it could not be economical on main-line services, with relatively few stops and re-starts.

Many other subjects, such as processes for cleaning coaches, painting methods and materials, visibility of signals, and the heating and ventilating of rolling stock and buildings were also mentioned in the course of Mr. Herbert's address. The information he gave to his audience of Members of Parliament should provide a background for an informed appreciation of the developments being studied by the railways, and the difficulties often in the way of rapid and economical attainment of the results desired.

Increasing the Life of Sleepers

IN meeting the heavy demands for sleeper replacements shortage of timber causes as much concern to United States railways as to the railways of this country. In the U.S.A. from 30,000,000 to 40,000,000 sleepers are required annually for replacement purposes, and approximately half of them, it is calculated, to replace sleepers which have split or cracked in service. The reasons for splitting are various. One is the fact that the sleeper is buried, except for its top surface, which is exposed to alternations of wetting and drying, while the remainder, embedded in ballast, remains at a much more constant temperature and moisture content. The unequal stresses in the timber so set up are the cause of cracking, or of the enlargement of existing cracks (caused during the preservative treatment) to splits. The trouble is accentuated in exceptionally dry seasons and by the formation of ice in the cracks in very cold winters. Fragments of ballast work their way into cracks, and act as wedges when climatic changes affect the sleeper, sometimes with sufficient pressure to cause splitting. Lastly, the continual pounding and vibration set up by passing trains accelerate the deterioration.

In recent years the Illinois Central Railroad, conducting an experiment which was not primarily connected with sleepers but with ballast, has obtained a valuable indication of a possible means of prolonging sleeper life. This experiment was one of waterproofing ballast by spraying it with liquid asphalt. In the course of the spraying, the sleepers of the half-mile test length became coated equally with the ballast, and the effect on sleeper renewals has been, over a period of five years, to cut them down to no more than 15 per cent. of the renewals on the adjacent untreated track. This confirms the observations made by a team of a timber company which in 1948 began making an extensive study of sleeper deterioration. The team had noted that few sleepers which had received a heavy coating of coal tar residue had suffered from splitting to the same degree as adjacent sleepers of similar age. Where sleepers had numbers painted on them for any purpose, the paint had sufficient protective effect to leave the numbers in heavy relief, with the surrounding timber weathered away to a depth, sometimes, of $\frac{1}{8}$ in.

It is clear from these observations that a protective coating of the exposed surface of the sleeper has valuable results. It helps to prevent the effects of successive wetting and drying, or of excessive dryness, from affecting the timber, and it also arrests the volatilisation or seeping away of the creosote from the upper surface, so slowing down the surface deterioration. It is possible, too, that a top surface coating applied before the application of baseplates or chairs would waterproof the wood in the bearing area to some extent and so reduce mechanical wear of the timber. Since these investigations were made, the timber company has been making a series of tests with sleeper coatings of various kinds, to determine their relative efficiency.

The efficiency of each coating compound tried has been judged by its ease of application, its adherence to the creosoted sleeper, and the ability of the coating to remain in a plastic condition in all weather conditions. A system of marking was devised with efficiency index figures graduated according to the ability of the coating to give a smooth protective covering to the timber and to fill in all cracks, and also based on the number and size of cracks or splits appearing in coated sleepers over the test period. The other factors taken into account were the cost of the coating, the speed and cost with which it could be applied, and whether it could be applied cold or required to be heated before application. The behaviour of the coatings under test has varied considerably, some having almost eliminated cracking and splitting, but others having had next to no effect.

Asphalt, varying in cost from 11½ to 27 cents a gal., according to whether supplied in tank wagons or in drums, has been the cheapest medium, followed by bitumen and other tar-base products, at 55 to 129 cents a gal., and certain wax compounds at 142 cents a gal. The cost of coating, labour and materials worked out at 25 to 35 cents a sleeper, according to the coating applied, and one man with proper spraying equipment could coat up to 500 sleepers a day. Roughly 4 to 6 lb. ($\frac{1}{2}$ gal.) of coating medium was needed to coat adequately the top surface and the ends of a 7 in. × 9 in. × 8 ft. 6 in. sleeper. Assuming $5.00 as the average cost of a sleeper in the U.S.A., and 20 years as its average life in a main line, each sleeper, over its life, costs approximately 25 cents a year; and as it is calculated that coating at, say, 30 cents a sleeper may prolong the life by 5 to 10 years, the cost of sleepers in this way might be brought down to 20 cents a year or even less. The experience that has been described relates exclusively to creosoted sleepers; no information is available whether a suitable coating has been found for sleepers that have been treated with mineral salts.

U.S.A. Railway Operating Records

AN article in our February 15 issue summarised the 1951 results of the U.S.A. railways, as set out in Dr. J. H. Parmelee's annual review of their operations. To show the progress in operating efficiency, we compared seven statistical averages for the first nine months of 1951 with the 1950 figures and said that several of the averages were expected to set up records for the whole year. A reprint of the review, with statistics revised to April 15, states that five of the 1951 averages were all-time records and that the remaining two have been surpassed only in war years. Details of this remarkable performance are recorded below:—

PROGRESS IN OPERATING EFFICIENCY

Statistical Average	1951	1950	Increase per cent.
Net ton-miles per freight train-hour ...	21,767*	20,343	7·0
Freight train load (short tons)	1,301*	1,224	6·3
Wagon load (short tons)	33·0	31·7	4·1
Freight train speed (m.p.h.)	17·0*	16·8	1·0
Daily mileage of freight locomotives ...	122·5	119·3	2·7
Passenger train speed (m.p.h.)	37·7*	37·4	0·8
Daily mileage of passenger locomotives ...	246·5*	237·2	3·9

* All-time record figures

Much of the improvement is due to the substitution of diesel traction for steam locomotive power. During the 12 months to March 31 this year, 2,545 diesel, four electric and 19 steam locomotives were put into service, while 16 electric and 5,350 steam locomotives were withdrawn. At April 1 the railways owned 12,996 diesel, 687 electric and 19,649 steam locomotives. Since 1944 the number of steam locomotives has been halved and at present only 16 are on order, compared with 1,440 diesels. There are now 22 of the 127 Class 1 railways using diesels entirely. Dr. Parmelee says of these developments that "the rise of the diesel has added a dramatic chapter to the long history of motive power progress on American railroads."

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Yield from London Area Fares

May 27

SIR,—An editorial in your issue for May 23 under the heading "Revised Fares Scheme with the Minister" includes the statement that £13,600,000 a year was originally estimated to be the yield from the increased fares introduced in the London Area on March 2. It should be pointed out that the basis of this estimate, which has appeared elsewhere in the Press, is not known. When the Commission submitted its Passenger Charges Scheme to the Transport Tribunal it estimated that the annual yield from the London Area alone would be £14,900,000. As a result of the changes made in the scheme by the Tribunal, the estimated yield from the London Area was reduced to £12,500,000.

The figure of £11,800,000 mentioned in your article as the annual rate of the yield from the London Area is apparently calculated on the basis of the estimated receipts of £2,500,000 for the eleven weeks from March 2 given by the Minister in the House of Commons on May 19. This estimate was given as a round figure because matters of this kind can never be calculated with complete precision. The Commission has no reason to depart from its estimate of £12,500,000 in a full year.

Yours faithfully,

J. H. BREBNER,
Chief Public Relations & Publicity Officer

British Transport Commission,
55, Broadway, London, S.W.1

British Railway Interests in Cuba

May 20

SIR,—With reference to your correspondent's article on this subject, published in your issue of May 9, whilst congratulating him on the very clear exposition of facts I regret that exception must be taken to the statements made in the closing paragraphs.

The inference which must be drawn from these statements is that the Board of the company has not done all that it should have done to safeguard British interests in this concern, which is completely incorrect as shown by facts. A British company operating in a foreign country is subject to the laws, as interpreted by the law courts, of that country, and when the company has exhausted all legal measures and failed to obtain the remedies sought, no further direct action is possible. The next step is to solicit the intervention of H.M. Foreign Office.

During the past years, the company has lost no opportunity of pressing its claims as strongly as possible, in the law courts, without obtaining any redress, and when the Supreme Court of Cuba rejected the company's appeals against Government intervention as being unconstitutional, as recently happened in the cases of the United Railways and one of its subsidiary companies, the company reached the limit of possible direct action.

Through close contact with H.M. Foreign Office, the matter was then elevated to a governmental plane, and as a result of a Note handed to the Cuban Government by H.M. Ambassador in Havana, the ex-President, Dr. Carlos Prio Sacarras, named a commission to discuss the situation of the railway, and possible solutions, with H.M. Ambassador and representatives of the company. This was the first time that such direct discussion with Government representatives had been obtained, and the Board had every hope of a successful issue. Opportunity was taken of the visit by the Chairman of this Cuban Government Commission to Europe for the United Nations Conference, to have various interviews with him, and matters seemed to be nearing a solution when the Prío Government was overthrown by the *coup d'etat* of General Batista. Through the Foreign Office and Her Majesty's Ambassador in Havana, the Batista Government is being pressed to re-institute the discussion of this important matter.

I trust I make it clear that the Board of this company has availed itself of all possible means of having the situation of the United Railways discussed and resolved with the Cuban authorities.

Yours faithfully,

R. G. MILLS,
Chairman,

United Railways of the Havana & Regla Warehouses Limited,
69, Old Broad Street, London, E.C.2

Revision of Oxted Line Services

May 16

SIR,—I was interested in your correspondent's letter in the April 25 issue, and make the following remarks from the season ticket holder's point of view. Examination of the Oxted line passenger services, together with the habits of the traveller, should show the necessity for complete revision. Many residents in this district are using Tunbridge Wells Central and Haywards Heath stations, with the result that overcrowding exists on routes to London from these places.

Under present conditions, "Montcler's" suggestions are a bit ambitious, but I am certain that a much better service could be provided on the lines suggested without expense of additional engine- and train-mileage. The timings of London trains from the Uckfield line are very bad for the average office worker and are about the same as 30 years ago, when the great majority of season ticket holders attended their offices from about 10 a.m. to 4.30 p.m. The London departure times of 3.52, 4.40, 4.50 and 6.10 p.m. are conclusive evidence.

Regarding acceleration of timings, this would be possible for the 3- or 4-coach workings, but I cannot see any hope for the peak-hour heavy London trains. It is obvious that the Operating Department is keen on safeguarding the life of the new 2-6-4 and 2-6-2 tank locomotives; my register of daily engine workings suggests that any attempt to accelerate trains would produce an unfortunate state of affairs in the future. Opinions on these new engines are not as unanimous as your correspondent suggests. Many of the regular travellers who criticised the performance of the 4-4-2 tank "13" class did not appreciate the fact that many of their shortcomings in 1947-49 were due to circumstances resulting from the war. As an enthusiast for the "H2" Atlantics and "13" 4-4-2 tanks, I suggest that great credit is due to them, when no accelerations appear after introduction of a new class of engine which, on paper, is eminently more suitable for the Oxted line services. Perhaps the L.M.R. type 2-6-4 engines' performance and reliability on the Southend line are being used as a yardstick. The terrors of Pitsea bank are multiplied ten times on a run like the 5.50 p.m. from Victoria to Tunbridge Wells West *via* East Grinstead.

Yours faithfully,

P. S. EVETTS

Small Grove, Jarvis Brook, Crowborough, Sussex

WASTE PAPER RECOVERY ASSOCIATION LIMITED.—The annual report of the Association shows that 1951 was a year of growing demand and grave difficulties. Among the many activities of the Association was the highly successful National Waste Paper Contest, described in the report. Mr. Sidney T. Garland, General Manager of the Association, states that the target of 1,000,000 tons of paper recovered was exceeded largely because of the help given to the Association. The final total of 1,078,138 tons was 204,000 tons better than the best year of the war, 1942. Recovery is now above mill requirements, and it is desirable that collections be regulated to the known current requirements of mills.

THE SCRAP HEAP

Holy of Holies

The Transport Minister is to be asked that St. Marylebone Station be used as a coach-park at weekends.—*From "The Evening News."*

Canine Courtship

A remarkable example of regular railway journeys by an unaccompanied dog is quoted by Mr. H. G. Hansen, Stationmaster at Holbaek, Danish State Railways, who was reminded of it by the paragraph in our April 18 issue about a terrier boarding a Southampton train at Waterloo.

Mr. Hansen writes: "While I was a traffic controller in Roskilde (Denmark) some 20 years ago, we were sometimes visited by an Airedale terrier, arriving on a train from Copenhagen. We believed he belonged to a passenger in the train and took no notice of him. Later, we discovered some facts about the dog. He did not belong to a passenger but travelled alone. His master was a secretary, who lived in Taastrup some eight miles away, and the dog's name was Bob. Bob had his sweetheart—another Airedale terrier—living in Roskilde. Bob liked to ride on trains, and when his longing for his sweetheart (named Bibi) grew too great, he entered a train in Taastrup and travelled to Roskilde, where he visited Bibi, played with her and shared her meals. Then he returned to the railway station, entered his train and travelled back to Taastrup.

"Though Roskilde had a lot of trains, of which many passed Taastrup without stopping, he never got into the wrong one, but returned safely to his master, who had no suspicion of his escapades. When he had played this trick several times, he was discovered by a ticket inspector on the train, and next time he went courting he was shadowed by a porter in Taastrup and his name and address established.

"His master was, of course, much surprised, but he paid for the return-ticket for Bob and moreover declared that he would do so every time Bob paid his courtesy visits to Roskilde. A year went by. Each time we saw Bob we called Taastrup on the phone and had a bill sent to his master, who paid without protest. But one day when we had not seen Bob for a long time we made inquiries, and heard that some time ago he had fallen when jumping on to the train. Tumbling on to the track, he was caught by the wheels—we missed him."

Redrawing the Railway Map

Various excursions into railway geography and history were made by speakers in the House of Commons debate on the Government's transport policy on May 21. The official report records among others the following exchange between members on opposite sides of the House:—

Mr. Gerald Nabarro (Kidderminster): Would the hon. Gentleman deny that very great benefits could flow from competition between the old Great Western route, between Birmingham and London, and the old London-Birmingham route?

Mr. Ernest Davies (Enfield, East): At the present time those two systems are in the same Region.

Mr. Nabarro: They are not.

Mr. Davies: Yes, they are . . . I do not think that the right hon. gentleman realises what has happened on the railways since the 1921 Act. I am not sure that he does not still think that the London, Chatham and Dover Railway competes with the London, Brighton and South Coast Railway, from Victoria to the south coast.

Royal Academy Carving

The wood carving illustrated below, which has been accepted by the Royal Academy, is the work of Mr. G. Ford, District Motive Power Superintendent, Sheffield, Eastern Region. Mr. Ford is well known to our readers by his many humorous drawings contributed to this page in the war period and in the post-war years.

Giving the Lie to It

Three hundred passengers lay across the railway line at Bologna, Italy, as a protest against the new summer time-table.—*From "The Daily Telegraph."*

Shocks in Store?

A thrush has built her nest on one of the gantries supporting the electric overhead cables at Old Trafford railway station, Manchester. Fifty steam as well as electric trains run underneath every day. But the thrush family don't seem to mind—not even when the cables flash at night.—*From the "Daily Mail."*

Crossing Curiosities

Our illustration in the May 16 issue of an unprotected railway crossing over a busy thoroughfare in Brisbane recalls to a correspondent seeing something similar in Cape Town in 1923. The line ran along the road, but fenced from it, until it suddenly swung across. The approach of a train was heralded by an electric bell. When it arrived the keeper appeared with whistle and flag and "proceeded to do a step dance in the road."

Another kind of crossing mentioned by our correspondent was a swing bridge over a creek on the Brightlingsea to Wivenhoe branch in Essex. At each end of the bridge there was a home signal fixed at "danger" and at the base a ground signal; at the usual distance in each direction there was a distant. The appropriate ground signal was pulled off for a train which slowed to walking pace on approaching the bridge.

The keeper would travel across on the engine and drop off on the other side. This must be one of the few cases where the distant was pulled off but the home kept on, our correspondent observes.

Wood carving by Mr. G. Ford, District Motive Power Superintendent, Sheffield, Eastern Region, which has been accepted for exhibition by the Royal Academy of Arts

H. A. W.

(A commemorative plaque to Sir Herbert Walker was unveiled at Waterloo on May 27)

It is, no doubt, th' Almighty's plan
That every age should breed the man
With clearer vision, greater zest,
To make him dominate the rest.

We well recall a form austere,
With frosty glance and frown severe,
Destined by nature, not design,
To camouflage a soul benign.

In him the fates had so combined
The qualities of heart and mind
As to command the deference due
To those august, imperial few,
Who, battle over, congregate
In the Valhalla of the great.

A. B.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

RHODESIA

Increased Meal Charges

An increase in the price of meals on dining cars, at station restaurants, and at the Victoria Falls Hotel will take effect on June 1.

Resignalling at Bulawayo

Electric signalling was introduced at the west end of Bulawayo Station and traffic yard on April 29. Signalling at the east end will continue to be manual, as Bulawayo will eventually become a one-entry station, with all lines converging on it from the west.

ARGENTINE

Experimental Trip of Diesel

The new Argentine-built diesel-electric locomotive *Justicialista* has made a further trial trip between Buenos Aires and Tucumán, covering the 1,157 km. in 13 hr. 20 min., an overall speed of 87. km.p.h.

Construction of Railbuses

The Ministry of Transport has announced that it will undertake the construction of 200 railbuses adapted from motorbuses previously used by the former Buenos Aires Transport Corporation. The vehicles will be used for services on branch lines with light passenger traffic.

CANADA

Revision of C.N.R. Capital Structure

The Government hopes to introduce legislation for revising the capital structure of the Canadian National Railways in the current session of Parliament. The Minister of Transport told the Canadian House of Commons Special Railway Committee that he expects the legislation to meet at least partly C.N.R. recommendations for the recapitalisation of its heavy debt structure. He did not know whether it would incorporate all or any of the specific recommendations on the subject made a year ago by the Royal Commission on Transportation.

The C.N.R. proposed to the commission a $1,000,000,000 recapitalisation plan, which would relieve it of some $46,000,000 a year in fixed charges, but the Royal Commission modified the plan considerably. The Minister said that he believed the C.N.R. board of directors would be enlarged eventually.

C.N.R. Kitimat Line

First reading has been given in the House of Commons to the Canadian National Railways Bill for the Terrace to Kitimat line in British Columbia to serve the new development of the Aluminium Co. of Canada Ltd. now in progress at Kitimat. The proposed line will be 46 miles long and the estimated cost is $10,000,000. The Aluminium Co. of Canada Ltd. plans to produce 91,000 short tons of aluminium annually, ultimately rising to 550,000 short tons.

The Minister of Transport stated that the development would also make available large timber reserves in the area, and open up a seaport at Kitimat, where there would be a deep-water dock, and, finally, a new town site, with facilities for an additional population of 8,000.

MEXICO

Co-Ordinating Commissions

Seven commissions have been appointed by the National Railways to co-ordinate modernisation schemes. They cover the following subjects: locomotives, sleeping cars, warehouses, auditing, labour and rates, and scrap metal.

National Wagon Building Plant

As a result of studies undertaken the past several months by a technical commission of the Bank of Mexico, la Compañia Constructora Nacional de Carros de Ferrocarril, S.A. (National Railway Wagon Construction Company), has been organised, with a total subscribed capital of 25,000,000 pesos ($2,893,500). It is said that the plant will be able to produce 1,250 box cars annually, as well as other types of wagon. It will both construct parts and assemble wagons. Production will begin within one year.

The initial administrative board of the new plant includes two officials of the National Railways.

IRELAND

Weed-Spraying Train

A weed-spraying train has begun a 1,100-mile circuit of C.I.E. lines which will take from five to six weeks to complete. A solution of water, sodium chlorate and sodium carbonate is used; each mile of track will receive about 120 gal. of the solution. Little growth occurs after spraying, and the chemical kills almost all weeds on the permanent way, except scutch grass and heavy tufts of grass.

The train consists of a spraying wagon, mixing wagon, and store and sleeping vans. Spraying is carried out through boffled nozzles, pumped by a belt drive from the wagon axle to the counter-shaft of the pump.

Abandonment of Co. Donegal Branch

In February the County Donegal Railways Joint Committee was authorised by an Order to terminate permanently all services on the Stranorlar-Glenties line. A further Order has now been made by the Minister for Industry & Commerce authorising the Committee to abandon the line and dispose of the entire property.

Meat Containers

C.I.E. is keeping abreast of developments in the post-war livestock export trade, of which a significant feature is the great increase in frozen, chilled and fresh meat traffic, replacing to some extent export of livestock. To cater for this increasing traffic, C.I.E. is developing insulated transport, necessary to maintain the condition of the meat.

Thirty-five road-rail insulated containers have been put into service and the Board has decided to construct a further 50 units. The design will be discussed between officers of the Board and the trade interests so that the best type of container may be achieved. Twenty-five flat-rail wagons are being built to carry these containers. To enable them to travel by passenger and perishable trains, they are to be fitted with vacuum brake equipment at a cost of £5,000.

Grant to S.L.N.C. Railway

The Minister for Industry & Commerce in Dublin has made a grant of £3,500 to the Sligo, Leitrim & Northern Counties Railway. Government aid was sought after the strike of employees last year for increased wages. The company is receiving grant-in-aid from the Government of Northern Ireland.

FRANCE

Paris-Lyons Electrification

The electrification of the section between Chalon-sur-Saône and Lyons has been completed and it is stated that the official opening will take place on June 24. Extension of the electrification from Dijon to Chalon-sur-Saône was completed early this year and trains began running to Chalon on January 22.

Double-Deck Wagons for Motorcars

The revised freight rates of 1947 fixed the minimum chargeable weight per wagon for motorcars by *régime accélerée* at 30 cwts. The change in the basis of charging corresponded with a noticeable decrease in the dead weight of the more popular types of car manufactured in the country, and it became uneconomic to despatch cars by rail unless two or three vehicles (according to weight) could be loaded on each flat wagon. As the number of wagons capable of such a load was limited considerable traffic was lost to rail.

From research undertaken on the Eastern Region, a method has been evolved whereby flat wagons can be adapted to carry cars in two layers. It is necessary to lower the floor level of the wagons, inside the drawbars (and particularly between the axles), which is done by using U-shaped steel plates, the car resting in the channel. An attachment fitted into grooves in the U-plates ensures adequate scotching.

Metal uprights fixed to the sidesills of the wagon support the framework of the upper floor to which are attached similar U-shaped plates on which the cars rest. To facilitate loading, the upper floor consists of three sections—a fixed central section, with hinged sections at each end; these sections can be lowered and attached to mobile U-shaped plates giving access to a loading platform.

Indian Regrouping Completed

Inauguration of Eastern, North Eastern, and Northern Railways marks final stage of project

(From a Correspondent)

THE final phase of the regrouping and integration of the Indian railways was completed on April 14, when the Northern, North Eastern, and Eastern Railways were inaugurated at New Delhi by Pandit Nehru, the Prime Minister. The first phase consisted of the formation of the Southern Railway on April 14, 1951, and the next step was taken on November 5, when the Central, and Western Railways were formed. Articles on these appeared in the May 4 and November 9, 1951, issues of *The Railway Gazette*. The Indian railway system is thus composed of six large zones varying from 5,399 to just over 6,000 miles.

The inauguration took place at the ceremonial station at New Delhi, built a quarter-of-a-century ago for the reception and despatch of special trains for Viceroys and Governors. The selection of New Delhi for the ceremony of inauguration was described by Mr. Gopalaswami Ayyangar, Minister for Railways, as "appropriate and the obvious place for an event of this national importance." The function was attended by Members of the diplomatic corps, Cabinet Ministers, high civil and military officers, as well as numerous distinguished public men.

The Prime Minister paid tribute to the railways and railwaymen of India. He referred to the strain on the Indian railways during the war in consequence of increased traffic, acute dearth of stores, and absence of renewals or replenishments, aggravated by the tragic events following the transfer of power. The manner in which the railways had restored themselves was not only cause for gratification, but it also belied the doubts of critics sceptical of the feasibility of State enterprise and undertakings. The railways, the largest nationalised undertaking in India, had proved an unqualified success, auguring well for the extension of this experiment into other spheres of national economy.

Mr. Gopalaswami Ayyangar described the inaugural function as a "landmark in the history of Indian railways," as it signified the culmination of a major process of administrative reorganisation initiated exactly a year before. The recommendations of the Central Railway Advisory Council with regard to the integration of the three zones were accepted only after a careful scrutiny on the merits, particularly from the point of view of operational requirements and efficiency of working.

The three new zones were depicted on an illuminated map which displayed in turn the shape of Indian railways before and after regrouping. A feature of the inaugural ceremony was an exhibition of rolling stock; locomotives; models of important railway projects, executed or contemplated; and photographs of places of interest or aspects of railway working. *Fairy Queen*, a pioneer Indian locomotive of 1858, provided a striking contrast to a new "WP" class locomotive. Other exhibits were a pictorial representation of the Assam Rail Link, a survey of the growth and development of locomotives on Indian railways during the past 100 years, and a model of the projected New Delhi Station.

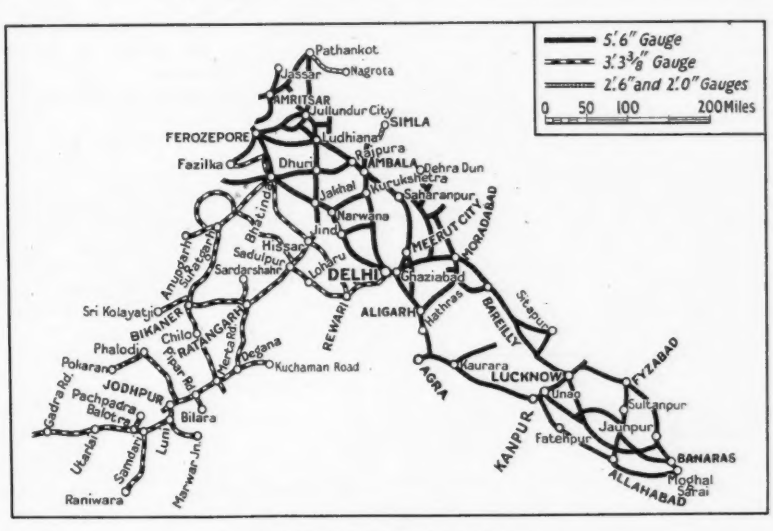
Northern Railway

The Northern Railway is composed of the Eastern Punjab, Jodhpur, and Bikaner Railways; the Allahabad, Moradabad, and Lucknow Divisions of the East Indian Railway; and the Delhi-Rewari-Fazilka section of the former B.B.C.I.R. which was temporarily incorporated in the Western Railway.

The area served embraces the States of Punjab (India), Delhi, and P.E.P.S.U. in their entirety, about half of Uttar Pradesh and Rajasthan, and part of Himachal Pradesh. The railway is the means of access to Jammu and Kashmir territory. It thus serves seven States of Northern India, and stretches over 730 miles between the holy cities of Banaras (Benares) and Amritsar. It also caters for the transport requirements of the entire Indo-Pakistan border from Pathankot in the north to Munabao in Rajasthan, in the west.

The first sod of what is now the Northern Railway was turned almost a century ago, and the first line, 119 miles long, from Allahabad to Kanpur (Cawnpore), laid on March 3, 1859, by the East Indian Railway.

Recent construction includes the 35-mile long extension from Rupar to Nangal, opened in 1947, to provide transport facilities for the construction of the great Bhakra Dam. Only a week before the inauguration of the Northern Railway the 27-mile link between Pathankot and Mukerian over the Beas river was opened to traffic; this last addition has shortened the distance to Kashmir by 44 miles, and brought the route mileage of the Northern Railway to over 6,000. Further construction is proceeding. A 46-mile line from Chunar, an historic town 466 miles from Delhi, to Robertsganj, is being built, to cater for limestone working.



The Northern Railway, India

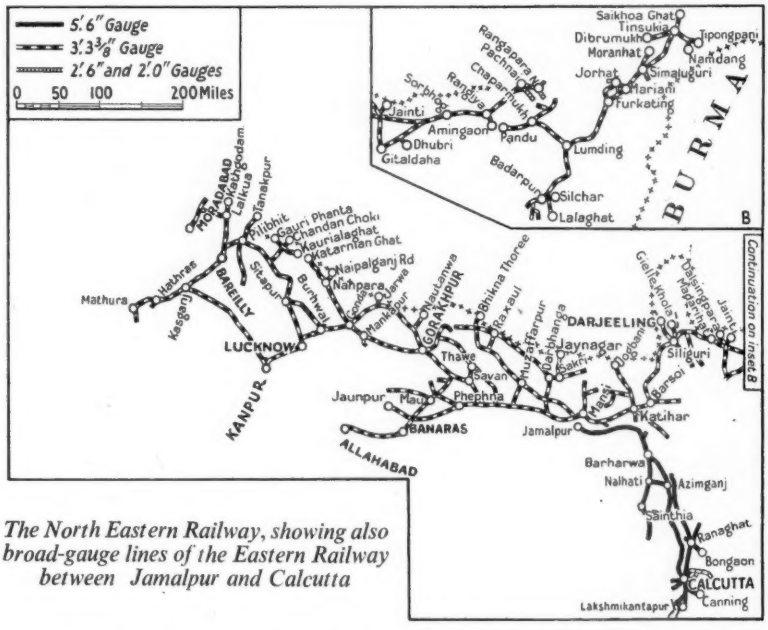
Of the constituent systems, the youngest is the Eastern Punjab Railway, on which fell the heavy burden of transporting 4,500,000 refugees after Partition in August, 1947. Before Partition, the Eastern Punjab Railway formed a part of the North Western Railway, itself the result of a merger in 1886. The Jodhpur Railway and Bikaner Railway were worked by a joint administration until 1924, and then separately by the respective States until the formation of Rajasthan in April, 1949. Part of the Jodhpur Railway went over to Pakistan at Partition, but continued to be worked by the Jodhpur Railway until August, 1948. After April, 1950, the Jodhpur Railway and Bikaner Railway became part of the Indian Government Railway system.

The Lucknow and Moradabad Divisions of the East Indian Railway originally formed the Oudh & Rohilkund Railway, in April, 1925, amalgamated with the East Indian Railway, of which the Allahabad Division already formed a part.

The territory covered by the Northern Railway is diverse geographically and economically. A number of spur branches rises to the lower ranges of the Himalayas and brings Mussoorie, Simla, and Kashmir within easy reach. The major lines are the arteries of the fertile Punjab (India) and Gangetic plains. The Northern Railway serves a number of major industries, notably, sugar, cement, flour, woollen and cotton textiles, paper, tobacco, leather, glass manufacture and brassware, and will help to exploit the natural resources of the State. The Assam Bengal Railway was taken over by the Government and amalgamated with the State-owned and State-managed Eastern Bengal Railway on January 1, 1942 to form the Bengal & Assam Railway.

The Bengal Dooars Railway, a company-owned system, was also acquired by the Government in 1941 and amalgamated with the Eastern Bengal Railway. During the war, the Dibru-Sadia Railway and the Jorhat Provincial Railway were added to the Bengal & Assam Railway.

As a result of Partition, the metre-gauge sections of the Bengal & Assam Railway within Indian territory were reorganised to form the new Assam Railway, and the broad-gauge Sealdah Division was transferred to the East Indian Railway. The Darjeeling Himalayan Railway, a 2-ft. gauge line connecting the hill station of Darjeeling with Siliguri, was amalgamated with the Assam Railway in 1948. The last addition to the Assam Railway was the Assam Rail Link, begun in 1947 and completed in 1950, to provide direct rail connection with Assam in Indian territory.



The North Eastern Railway, showing also broad-gauge lines of the Eastern Railway between Jamalpur and Calcutta

Rajasthan and Himachal Pradesh, which are industrially less advanced but rich in marble and minerals. The area served by the system is historically and culturally rich.

North Eastern Railway

The North Eastern Railway has been formed by regrouping the Oudh Tirhut Railway and Assam Railway, and the Fategarh District of the former Bombay Baroda & Central India Railway.

The Oudh Tirhut Railway, the largest constituent, came into existence as recently as January 1, 1943, when the Bengal & North Western and the Rohilkund & Kumaon, two company-owned railways, were acquired by the Government.

The Assam Railway was formed on August 15, 1947 as a result of Partition. This railway had a route mileage of 1,774. A large part was originally the Assam Bengal Railway, a State-owned line worked under contract by a company whose profits were guaranteed by

The Fatehgarh District of the former Bombay Baroda & Central India Railway (now part of the Western Railway) has a total length of 245 miles, on the metre gauge. It comprises the section of line from Mathura to Kanpur *via* Hathras and Kasganj, following the Ganga for a considerable part of the distance.

The North Eastern Railway stretches from Achnera, near Agra in the west, to Ledo in the far north-east, near the Burma frontier. The Assam Link section traverses the main drainage from the Himalayas and is therefore subject to serious and sudden flooding which necessitates the provision of more extensive bridging than is necessary elsewhere. On this length bridging exceeds 100 ft. a mile.

Eastern Railway

The older of the two component units of the Eastern Railway is the East Indian system. In May, 1845, the East Indian Railway Company was formed in England, and on August 15, 1854, the first section, from Howrah (Calcutta) to Hooghly, was opened to passenger traffic. Extensions proceeded so rapidly that between 1862 and 1866 the gaps between Howrah and Delhi were all filled, including the connection to Agra, and the bridges over the Yamuna (Jumna) at Allahabad and at Delhi.

The original main route of the East Indian between Calcutta and Delhi followed the fertile valley of the Ganga (Ganges) to tap such important towns as Bhagalpur, Monghyr, and Patna, and thus ensure early financial success. Had the present Grand Chord route been followed about 200 miles would have been saved and the Jharia coalfields would have been discovered and developed some 40 years earlier.

The construction of the East Indian Railway system entailed the building of a number of large bridges and four important tunnels. The history of the railway has been bound up with that of the coal industry. Of the 60,000 million tons of coal estimated in 1932 as the total reserves to a depth of 1,000 ft., about 26,000 million tons lie in Girdih, Raniganj, Jharia, Bokaro, and Karanpura fields, which the East Indian Railway helped to develop. Of the total production of about 34,000,000 tons in India today, about 29,000,000 tons are produced in the area now served by the Eastern Railway. During the five years 1914-18, the daily average loading on the East Indian Railway was about 1,900 wagons of coal and 1,100 wagons of goods; in 1949, 1950, and 1951, the coal loading was 2,126, 2,117, and 2,415 wagons a day, respectively.

The Bengal Nagpur Railway was one of the later major railways. It was formed of existing broad and narrower gauge lines, and by subsequent conversion and expansion of them, attained its final size. The first section of what became the Bengal Nagpur was a metre gauge line from Nagpur to Rajnandgaon, 145 miles long, opened in 1882. It was subsequently converted to broad gauge and became part of the shortest route from Bombay to Calcutta.

A broad gauge line from Nagpur to Sitarampur (on the East Indian Railway near Asansol, and about 137 miles from Calcutta) was authorised in 1884 but progress was halted because the funds were required for mobilisation. The Government was persuaded to allow private enterprise to take charge of the scheme. In 1887 the Bengal Nagpur Railway Company was formed in England. By 1891 the then main line of the Bengal Nagpur Railway, running from Nagpur *via* Gondia, Raipur, Bilaspur, Chakardharpur, Sini, and Purulia to Asansol on the East Indian Railway was completed. Sections opened in 1898

gave the Bengal Nagpur company its own main line direct into Calcutta *via* Khargpur.

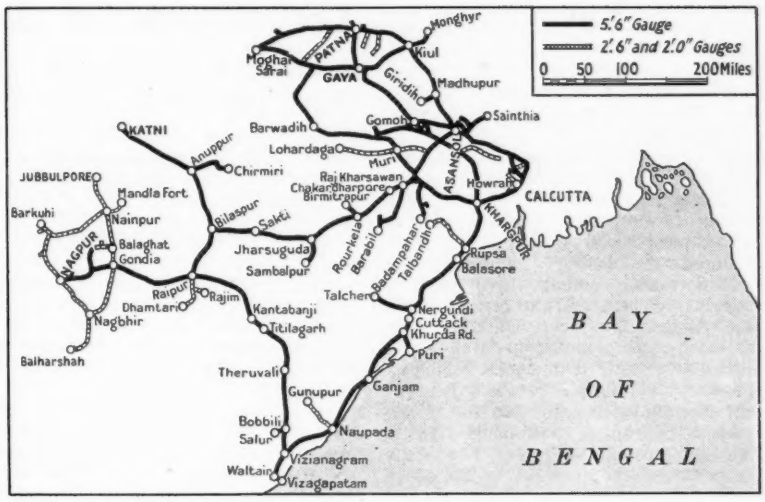
The Northern Section of the East Coast Railway was constructed between 1893 and 1897; the line extended from Waltair to Cuttack. It was then taken over by the Bengal Nagpur Railway shortly after it had constructed the link between Khargpur and Cuttack in 1899, which allowed through running between Calcutta and Madras. The last important broad-gauge construction was on the line from Raipur to Vizianagram, traversing undeveloped country the size of England. It was opened throughout in 1931, giving rail connection between the port of Vizagapatam and the interior. Vizagapatam is the most important deep-sea port on the east coast, between Calcutta and Madras. The port was opened to ocean-going steamers in October, 1933.

The Sealdah Division is all that remained in India of the broad gauge section of the Bengal Assam Railway when that system was partitioned in 1947. The first section of this railway was opened from Calcutta to Port Canning, in 1863.

The large industries situated in Calcutta and its neighbourhood use many raw materials and supplies from regions traversed by the Eastern Railway. Calcutta is not only the jute manufacturing centre of the world, but also the centre for a large number of other metallurgical and engineering industries, cotton mills, chemical, pharmaceutical, and other specialised industries.

The Eastern Railway connects the ports of Calcutta and Vizagapatam, with West Bengal, Bihar, Orissa, Madhya Pradesh, Vindhya Pradesh, and Madras. It provides transport facilities for the rice and jute producing areas of West Bengal and Bihar, the timber and forest products of Orissa and Madhya Pradesh, the coal and iron industries of Bihar and West Bengal, and the manganese, iron ore, and mica mines of Madhya Pradesh, Bihar, and Orissa. It also serves such important specialised industries as metallurgical and steel manufacture at Tatanagar, chemical fertilisers at Sindri, locomotive production at Chittaranjan, and shipbuilding at Vizagapatam. Large-scale national projects are in hand in the territories.

The senior appointments on the three systems were given in the May 23 issue of *The Railway Gazette*. The Government has set up with the Headquarters at Calcutta a Rail Movement Liaison Organisation, working directly under the directives of the Railway Board, to ensure maximum co-ordination and efficient movement of traffic between Calcutta on the one hand, and North Bihar, North Bengal, and Assam on the other. All these areas have vital trade and business links with Calcutta. A liaison officer has also been established at Moghalsarai, an important junction where the Northern and Eastern Railways meet. He is a Deputy Director directly under the Railway Board.



The Eastern Railway. This system also includes the broad-gauge lines of the former East Indian Railway lying between Calcutta and Jamalpur, shown on the map of the North Eastern Railway on page 598

U.S.A. RAILWAY SETTLEMENT WITH UNIONS.—The three-year-old United States railway dispute ended on May 21 when three large unions accepted a Government settlement proposal, which the railway companies had accepted on May 19. The railways have been under technical control of the Army since they were seized in August, 1950, to avert a nation-wide strike. Since March, 1949, when the long dispute over working rules and wages began, strikes and " sick " walk-outs have occurred at least three times—in 1950, 1951 and last March. The March strike brought a no-strike Court Order which is still in effect. The new agreement will remain in force until October, 1953. Although it is substantially the same as one tentatively accepted by the heads of the three unions in December, 1950, but rejected by the rank and file, it contains one change which the unions called a " major improvement " on the 1950 proposal. It gives the unions the right to reject carrier demands for extending the runs of train crews beyond a divisional terminal point. Apart from this carrier concession, which replaced binding arbitration over inter-divisional train run disputes, and two other changes of rules, the agreement is almost word for word the rejected 1950 proposal. The fourth large operating union, the trainmen, settled its dispute with the railways a year ago when it accepted the December, 1950, proposal. A moratorium on wage and working rule changes until October, 1953, is provided for. More than 150,000 members of the engine drivers, firemen and guards unions will receive an immediate wage increase of up to 37 cents an hour and lump sum payments of from 600 to 1,100 dollars for back pay to last October. Back wages will cost the railways an estimated $100,000,000. All yard workers receive an average 37 cents an hour wage increase. Part of the wage rise comes from a cost-of-living escalator clause in the new contract; this raises or lowers wages each three months one cent for each point change in the Government cost-of-living index. The present average wage rate for yard workers is about $1·59 an hour. Train crews receive $1·95 an hour. The three unions concerned, the Brotherhood of Locomotive Firemen, the Order of Railway Conductors, and the Brotherhood of Locomotive Firemen & Enginemen, represent some 150,000 workers in the transport industry.

BUDAPEST UNDERGROUND RAILWAY.—The 5-mile underground railway being built in Budapest, running from east to west, will cost 2,000 million forints. Mining methods are being used in the construction. The diameter of the tunnel is 5 m., and the length of the station platforms is 120 m. The trains will consist of bogie cars 19 m. long, each accommodating 240 passengers. Maximum speed will be 67 km.p.h. (43 m.p.h.), travelling speed 36 km.p.h. (22 m.p.h.). The headings are driven by the same shield method as that used for the Moscow Underground. The shield consists of a steel cylinder some 13-17 ft. in length, corresponding in height to the diameter of the tunnel. On the front of the shield is a set of cast-steel cutting blades; hydraulic jacks arranged in a circle at the rear exert a pressure of several thousand tons, thus moving the steel cylinder slowly forward. When the cylinder has thus advanced a certain distance, the earth cut away by the blades is removed, and the tunnel behind the shield is lined.

Beyer-Garratt Locomotives for Benguela Railway

A modernised version of a powerful design on a 13-ton axleload with tractive effort of 52,360 lb.

IN company with many other railways in Africa, the story of the Benguela Railway must be one which will command our interest and admiration of the pioneers who so often have contributed the lasting foundation for transport development. Livingstone so rightly predicted that the civilisation of the African continent would be promoted by general industrial development.

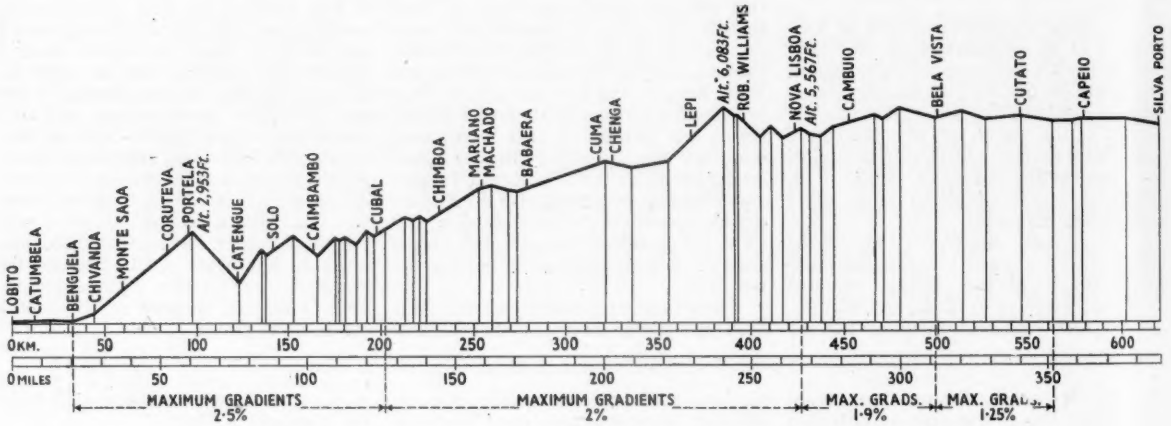
It was in 1902 that Robert Williams, pioneer and disciple of Cecil Rhodes, obtained a concession from the Portuguese Government and constructed a railway through Angola. The main purpose was the provision of an outlet to the sea from the newly found mineral deposits in Northern Rhodesia and the southern part of the Congo. The port of Lobito was chosen, although at that time it was an uninhabited strip of sand. It had, however, been recognised to be one of the finest potential harbours down the West Coast.

Geographical Features

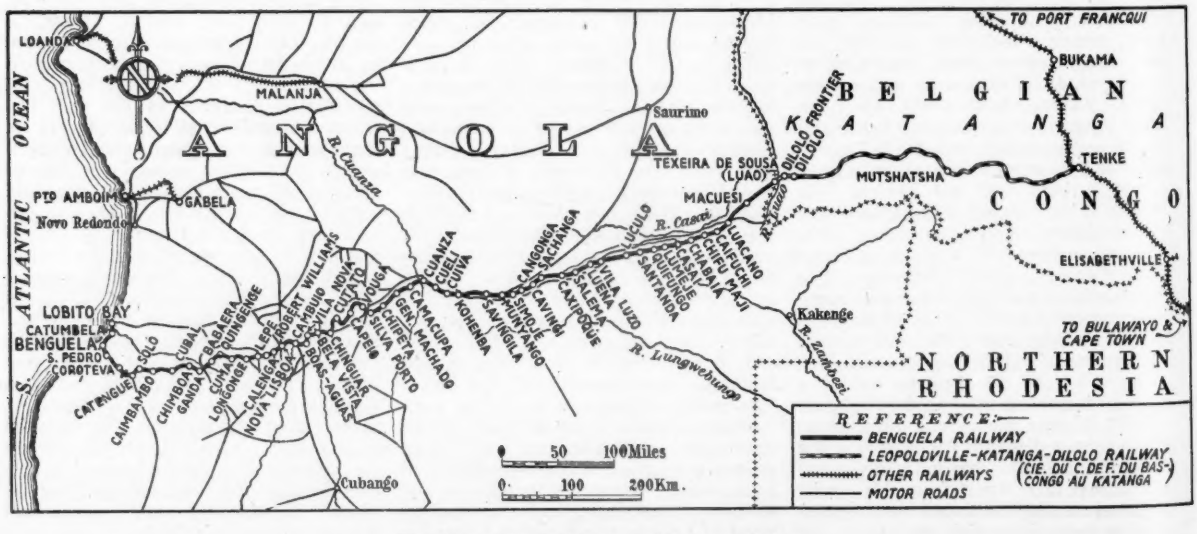
In its original conception, this railway was to be the connecting link between the seaboard and the Congo, and its general effect on trade in the country through which it passed could not be forecast. In common with other railways in Africa, the Benguela Railway makes its way directly inland from the coastal port climbing a severe escarpment to gain the uplands of the interior. The absence of industry or large towns naturally left much freedom of location.

By 1912, over 400 miles of 3 ft. 6 in. gauge line had been built and the small town of Huambo (now Nova Lisboa) on the plateau had been reached and with the foresight which characterised this venture, this place was chosen as the location of the central workshops of the railway; the general profile of the line is shown in the accompanying illustration. When the line was originally constructed, a rack section was necessary with a grade of 1 in 16·8 when climbing the mountain gorges some 50 km. (31 miles) from Lobito. Apart from the rack section, the ruling grade was 1 in 40 with curves of 300 ft. radius.

The construction of the line became much less difficult when approaching Huambo, that is, after passing the highest point of the line at 6,000 ft. above sea level. The line was now routed along the watershed with a ruling grade of 1 in 80 and 10-chain curves, reaching the frontier in 1928, 1,346 km. (836 miles) from Lobito. Since that



Gradient profile of a section of the main line from the coast to the interior plateau



The Benguela Railway and its connections

time the track has been considerably improved and through passenger trains from the Belgian Congo provide every modern comfort. The rack section has recently been eliminated by the building of a diversion.

An example of the foresight of the builders of the railway was the acquisition of land on either side of the line and the planting of eucalyptus forests. The absence of coal dictated a policy of burning wood fuel which is still used for locomotives of this railway. The eucalyptus forests are maintained, and progressive planting by mechanical means has ensured a steady supply of wood fuel readily available alongside the line.

Original Locomotives

The first locomotives acquired were small four-coupled engines in 1906 and between then and 1921, a number of locomotives were obtained of increasing size with 0-6-0, 4-6-0 and 4-8-0 wheel arrangements. In 1926, the railway realised the need to increase the capacity over the heavy 1 in 40 and 1 in 50 sections and six Beyer-Garratt locomotives were obtained from Beyer, Peacock & Co. Ltd., and were at that time the most powerful engines in the 3 ft. 6 in. gauge with 60-lb. rail. The locomotives were described and illustrated in our April 1, 1927, issue. They were built to handle twice the load previously taken by the 4-8-0 class "9" locomotives, and in 1929 the railway purchased a further 14 of these Beyer-Garratt locomotives.

During the past few years, considerable development has taken place in Angola. New works have been undertaken, extension and improvement of harbour facilities and a general increase in traffic within the territory has brought pressure on the transport facilities. All the railways in Angola have therefore found it necessary to purchase locomotives and rolling stock. The general demand for improved communications across the continent of Africa consequent upon the development of the Rhodesias has made it even more important that the Benguela Railway should be fully equipped to handle the maximum traffic to the Atlantic seaboard. This railway therefore ordered and has now received 18 Beyer-Garratt locomotives similar to their successful prototype, while orders have been placed with Beyer, Peacock & Co. Ltd. for ten more locomotives.

General Design

When considering recently the purchase of further rolling stock and locomotives, the railway decided to continue in general design with their existing class "10B" Beyer-Garratt locomotives. The axleload of 13 tons was to remain the same and also the general characteristics, but the engines were to be modernised by the adoption of many important improvements which have been introduced as a result of the maker's and railway's experience.

Important alterations have been the introduction of Beyer-Peacock patent adjustable pivot centres, redesign of the bogies with the inclusion of roller-bearing axleboxes and the provision of grease lubrication equipment for the coupled axleboxes. These locomotives, as before, were required to be capable of hauling loads of 470 tons on grades of 1 in 40 with uncompensated reverse curves of 330 ft. radius at a minimum speed of 10 m.p.h.

The 18 new engines are known as the "10C" class.

Boiler Design

The boiler is of very ample proportions, particularly the Belpaire firebox, which provides a large and deep grate for the successful burning of wood fuel. The inner firebox is of tough pitch copper in accordance with B.S.S. 24/11, 1943, and four arch tubes are provided. Flexible water space stays of Longstrand steel are arranged in the breaking zones and the four front rows of sling stays to the crown have been replaced by flexible stays.

The 40 superheater flue tubes of 5¼ in. outside dia. and the 251 small tubes of 2 in. outside dia. are expanded and beaded at the firebox end. The superheater supplied by the Superheater Co. Ltd. has 40 elements of the latest improved type with ball joints, and solid-drawn steel tubes with integrally forged return bends. Washout facilities have been improved by the provision of a man-hole and cover at the bottom of the boiler barrel. Improvement has also been made in the location of the various washout plugs and seatings around the firebox; the regulator is of the balanced valve type.

The engines were previously fitted with two Gresham & Craven No. 12 live steam injectors, but one of these has been replaced by a Davies & Metcalfe "J" type exhaust steam injector. Both are fitted on the left-hand side of the engine. The smokebox has been redesigned, principally to accommodate the Kylchap blast system and opportunity has been taken to re-align the steam and exhaust pipes to the cylinders so that the joints shall be in easily accessible positions. The steam pipe to the hind engines is now carried outside, underneath the boiler frame platform in accordance with current practice.

Semi-oblique view of the locomotive

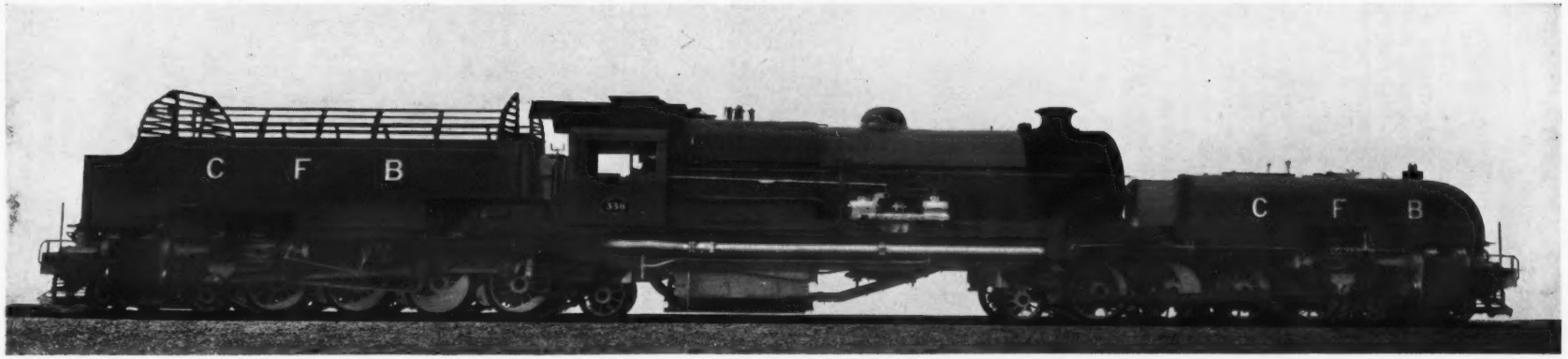
The firegrate is 51·5 sq. ft. in area. The ashpan is specially arranged for the burning of wood fuel and provided with suitable air and cleaning doors. A dust protection plate is fitted across the back end of the ashpan.

Engine Units

Although the first six locomotives of this class, which were built in 1926, were fitted with plate frames, all subsequent locomotives have engine unit frames of the bar type, of steel to B.S.S. Report 24, Spec. 17. The opportunity has been taken with these new engines to redesign the spring gear, the original underhung springs having been replaced by overhung springs. The whole unit chassis has been considerably strengthened. The pivot centres cast integrally with the frame stretchers are of the Beyer-Peacock patent self-adjusting type with mechanical lubrication and spring-loaded friction side-bearers.

The cylinders of close grain cast iron are cast solid with the half frame stay, and the original design has been modi-

Beyer-Garratt Locomotives for Benguela Railway



One of the 4-8-2+2-8-4 locomotives recently completed by Beyer, Peacock & Co. Ltd.

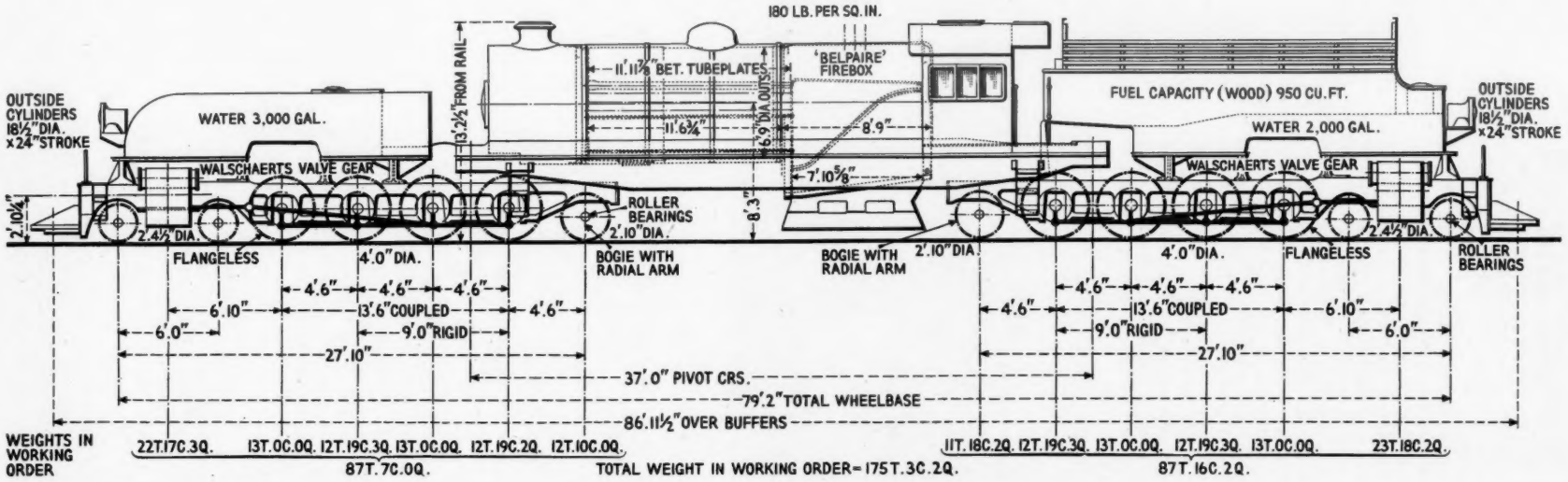


Diagram showing principal weights and dimensions

fied by straightening steam passages to improve the steam flow. The piston heads are cast iron with three narrow rings, as originally, but tail rods for the main pistons and the piston valves have now been eliminated. The piston valves are 10 in. dia. with two wide rings. Bye-pass valves of the Hendrie type are fitted to the steam chest. The piston rods and valve spindles are fitted with United Kingdom metallic packing.

The previous two-bar crosshead arrangement has been replaced by crossheads of the Laird type. A simple and straightforward arrangement of the Walschaerts gear has been achieved with a valve travel of 6¼ in., the cut-off being 75 per cent. in full gear. The whole motion is arranged for soft grease lubrication.

The connecting and coupling rods are forged from class C steel, but have been redesigned for the use of hard grease lubrication to all crankpin bearings, soft grease being used for the knuckle joint pins. The fixed bushes are of nickel chrome cast iron with bronze floating bushes. The latest type of Hadfield patent power reverse gear is in a very accessible position on the right-hand side of the boiler unit frame. This gear ensures easy and accurate setting with complete absence of creep.

Coupled Axleboxes

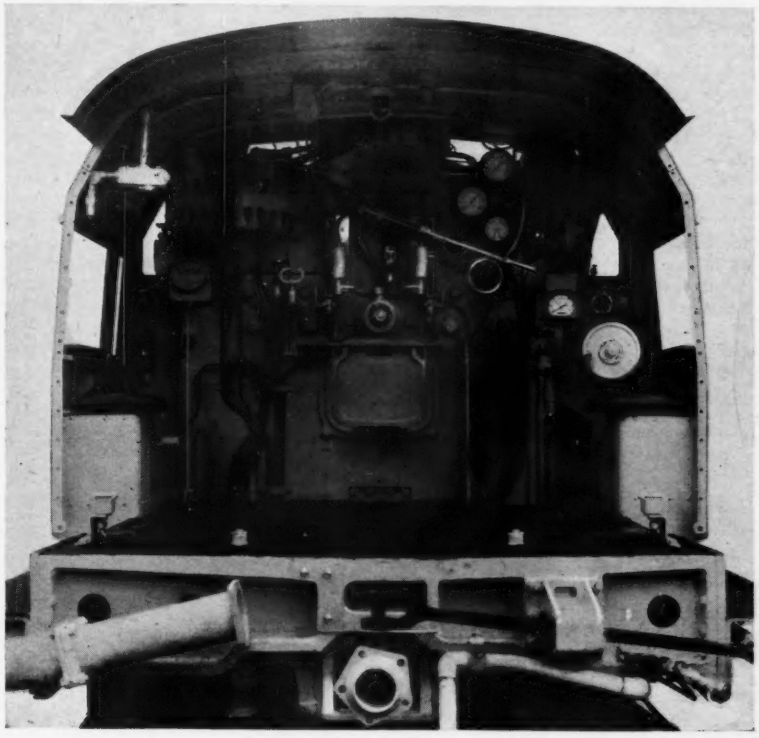
The coupled wheel axleboxes, although previously of cast steel with Stone's bronze bearings, are now in solid bronze and are interchangeable with the "11" class tender engines built by the North British Locomotive Co. Ltd. described and illustrated in our issue of May 11, 1951. Ajax type grease lubricators are incorporated. The horn guide faces are lubricated from the oil well in the top of the box. All wheel centres are of cast steel complete with balance weight with lead filling in the driving wheel balance weights only. Approximately 27 per cent. of the reciprocating weight is balanced. Wheel hammer blow is limited to one ton at 40 m.p.h.

Grease lubrication is now used for the hub faces. The horn guides are fitted with the liner and wedges of class A steel. The steel tyres of class E steel are secured by screws. As already described, the spring gear has been redesigned consequent upon the adoption of the overhead type of spring and compensation is arranged in three groups consisting of leading bogie; outer coupled, intermediate and driving; and inner coupled and inner bogie.

Ball and expansion joints are in accordance with the maker's latest practice, and all pipes have been arranged for the best possible accessibility. The expansion joint has been modified to accommodate a stainless-steel ground sleeve welded to the end of the pipe working in Wallico moulded packing.

The earlier engines of this class were fitted with the tilting mechanism on the front tank to enable tubes to be withdrawn. In this new design the tanks, which are of riveted construction, have been modified with a pocket in the front tank. For this purpose the hind tank fuel rack has been altered to comply with the moving structure gauge. An entirely new method has been introduced of locating and fastening down the front and hind tanks. This is a patented arrangement which ensures safe anchorage, but allows that flexibility so necessary with a large tank. A water level indicator is fitted in the cab.

The front and hind draw gear consists of a Henricot automatic coupler type IXM, with steel spiral drawbar springs, which is standard on the railway.



General view of cab arrangements showing layout of fittings

Bogie and Brake Design

Both the inner two-wheel trucks and outer four-wheeled bogies have been redesigned to take SKF spherical roller-bearing axleboxes. In the new locomotives the guide faces of the outer bogie axleboxes and axlebox guides are fitted with ¼ in. thick manganese steel liners. The outer bogie is of the centre bearing type.

An alteration has been made to provide reliable grease lubrication to the top swing link pins and through the link to the bottom pins, grease being fed from grease nipples by a flexible connection to the links. The bogie side control is by means of laminated springs and two-pin swing links, and on the inner truck by coil springs.

Braking is now arranged on all coupled wheels and the opportunity has been taken to redesign the brake rigging in view of the revision of the structure gauge. Automatic vacuum brake is fitted for operation on the train with steam brake on the engine units. The vacuum brake ejector is of the latest SSJ type supplied by the Vacuum Brake Co. Ltd. mounted on the side of the firebox ahead of the front of the cab.

There is a steam brake valve of the graduable type Mark IV. A new arrangement has been the provision of a valve in the air branch from the train pipe to the steam brake cylinder. This enables the automatic application of the steam brake to be shut off. Arrangement is also made for bleed steam to keep steam pipes between brake valve and cylinders free from condensate.

A simple form of counter pressure braking has to be provided for this railway and it is similar to the Chatelier arrangement.

Cab and Accessories

The cab has been widened by building out to the moving structure gauge and is therefore particularly roomy with the floor free from obstruction, a necessary feature in the case of wood firing. Amendment has been made to the firehole door by the provision of a combined deflector and firehole door easily operated by a quadrant and pawl.

These arrangements are most important as several men are kept fully occupied in feeding logs up to 2 ft. long and 10 in. dia. into the firebox by hand, a continuous operation when on the

heavy grade. Upholstered seats and arm rests give the crew comfortable positions and several alterations have been made in the siting of gauges and other accessories in the cab to bring them into full view.

There are two Wakefield, Eureka type N four-feed lubricators, providing feeds to the two cylinder barrels and two steam chests of the front and hind units. Other lubrication is from a 12-feed Wakefield mechanical lubricator of which nine feeds are used to cover two each for the pivot centres, exhaust ball joints, piston rod packing and piston valve rod packing and one to the steam ball joint.

A Teloc speed indicator and recorder, of the same type as that fitted on the "11" class tender locomotives, is placed in full view of the driving position. An electrical pyrometer for the superheater is in a similar position on the fireman's side. Klinger reflex water gauges of extra depth with indicator plates ensure safe reading of water level when working on the heavy grades.

A new departure has been the operating of the water cut-off valve in the feed well from the cab with locking arrangement to secure the valve in the central or either of the closed positions. This valve enables the water to be retained in either set of tanks and not equalised between them in the normal way.

Stone's electric lighting system is fitted with turbo-generator on the left-hand side of the boiler frame. This supplies 32 V. a.c. for the usual cab fittings and front and hind headlights of the Tonum BE type with illuminated engine numbers.

The steam chest pressure-gauge is calibrated in lbs. per sq. in. and atmospheres. The steam turret is located outside the cab. A Nathan type chime whistle is fitted. There are three, 3 in. Ross pop safety valves on the firebox. An entirely new accessory on the engine is the automatic wheel flange lubricator class C.P. Two of these lubricators supplied by Davies & Metcalfe are fitted on the inner headstock of the front unit and one on the engine frame of the hind unit, both lubricating the wheel flanges of the inner bogie. These lubricators are a new type and are operated by pendulum motion, which ensures that oil is delivered at the wheel flanges in proportion to the amount of side movement, and no oil is supplied when the locomotive is stationary. It is entirely automatic in operation.

The cylinder cocks are steam operated and the sand gear is of the Lambert type. The locomotives are provided with a complete set of tools, four 35-ton lifting and traversing screw jacks and rerailing ramps. The locomotives bear railway numbers 331-348 and are finished painted black. These powerful locomotives have been built to the requirements of the Benguela Railway under the supervision and inspection of their Consulting Engineers, Messrs. Freeman Fox & Partners. They will be a most welcome addition to their existing locomotives for heavy grade working, especially bearing in mind the fact that the earliest of this type have been in service since 1926.

The leading dimensions are as follow:—

Cylinders (4) dia. × stroke	18½ in. × 24 in.
Coupled wheels, dia.	4 ft.
Wheelbase, rigid	9 ft.
Axleload	13 tons
Adhesive weight	104 tons
Total weight (in working order) ...	175 tons
Boiler pressure	180 lb./sq. in.
Heating surface:—	
Tubes	2,224 sq. ft.
Firebox inc. arch tubes	229 sq. ft.
Total evaporative	2,453 sq. ft.
Superheater	458 sq. ft.
Total	2,911 sq. ft.
Grate area	51·5 sq. ft.
Tractive effort at 85 per cent. boiler pressure ...	52,360 lb.
,, ,, 75 per cent. boiler pressure ...	46,200 lb.
Fuel capacity (wood)	950 cu. ft.
Water capacity	5,000 gal.

Western Region Metrovick Gas-Turbine Locomotive

No. 18100, *the Metrovick gas-turbine locomotive of the Western Region, on arrival at Bristol Temple Meads with the "Merchant Venturer" express from Paddington*

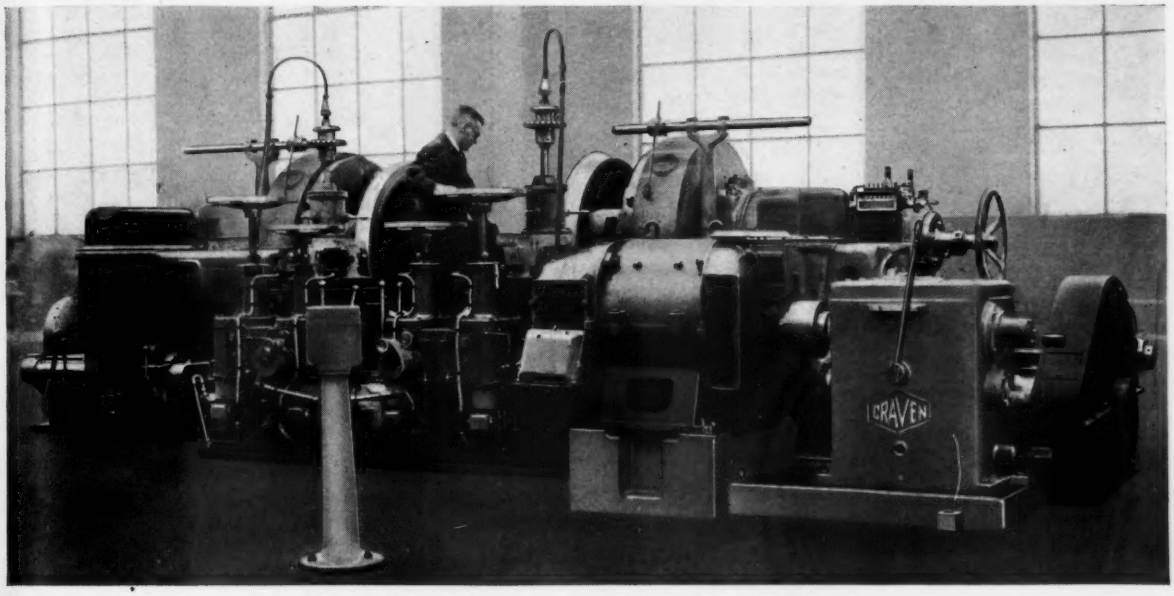
Photo. [*L. J. S. Fenn*

New Wheel Lathe for Acton Works

Designed for re-turning tyres from 2 ft. 2½ in. to 3 ft. 7½ in. in diameter on the tread

THE long and close collaboration between the engineers of London Transport Executive and its predecessors, and the technical staff of Craven Brothers (Manchester) Limited, is exemplified in the improvements which have been embodied in the latest wheel turning lathe supplied by the firm to the Acton overhaul works of the L.T.E.

The earlier machines were equipped at the rear with auxiliary grinding heads for a final grinding operation on the wheel treads, and while the latest machine has been supplied without grinding equipment, provision has been made for its application at a later date should the need arise.



Craven wheel-turning lathe under test at the maker's works

Design Details

The new lathe is designed for re-turning simultaneously the profiles of a pair of 4 ft. 8½ in. gauge carriage wheels mounted on their axles and will deal with wheels ranging from 2 ft. 2½ in. dia. to 3 ft. 7½ in. dia. on the tread. Both headstocks have 4 ft. dia. faceplates and are moveable outwards or inwards along the bed for loading and unloading purposes by means of separate 5-h.p. reversing motors driving through reduction gearing, friction-disc overload slipping clutches and traverse screws at the ends of the bed.

Each headstock is securely locked to the bed in its working position by two pneumatic cylinders working from a compressed-air supply at 80 to 100 lbs. per sq. in. pressure. One cylinder operates through rack and pinion mechanism upon the nuts of three tee-headed front clamping bolts, and the other upon the nuts of three rear bolts.

Each headstock has a cast-iron spindle mounted in parallel capped bearings, fitted with phosphor-bronze bearing steps. The front journal is 16 in. dia. by 16 in. long, and the rear journal 10½ in. dia. by 13¼ in. long. End pressure is taken by a large-dia. ball thrust bearing. Sliding barrels inside the spindles are recessed at their nose end to carry split cone collets for gripping and supporting the wheel sets by means of their outside axle journals. The barrels have positive, screw-actuated axial adjustment by large hand-wheels and effective mechanism for locking in position after adjustment.

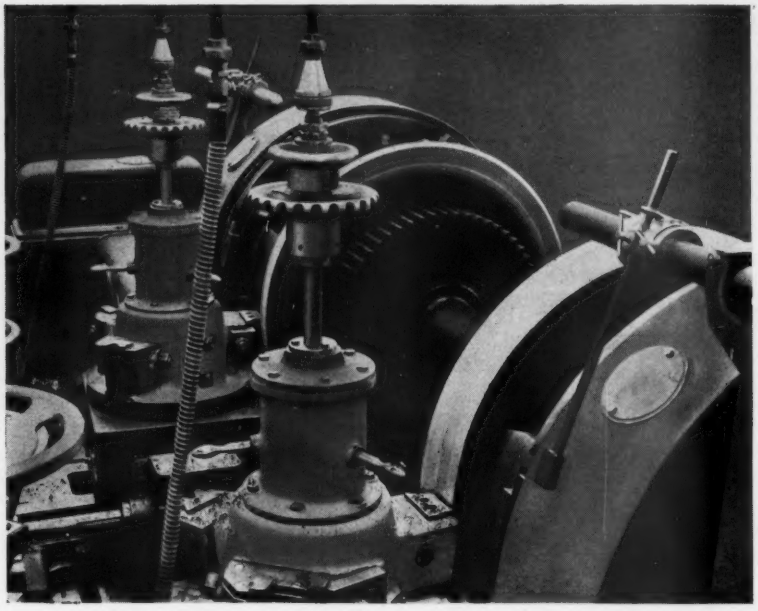
The machine is driven by a directly-coupled 50-h.p. variable-speed motor and a two-speed main gearbox, both mounted on a separate baseplate attached to the front of the right-hand end of the bed, and then by spur reduction gearing to a 5½ in. dia. keywayed bed shaft. Sliding pinions on the bed shaft are supported and enclosed in capped bearing housings extending from the headstocks, and drive large gear wheels mounted on intermediate shafts inside the headstocks. Final driving pinions on the shafts engage large-dia. steel, spur-gear rings secured to the rear of the cast-iron faceplates. Spindle speeds range from 1·1 to 10·7 revolutions a minute.

Each faceplate has three drivers of the side-push type arranged with primary setting screw-adjustment for bringing serrated jaw pads to bear lightly against the sides of the wheel tyres. These are arranged upon wedge-shaped jaw slides in such a manner that, after initial engagement, the driving grip is automatically increased by the resistance to the cutting tools, ensuring a powerful drive with the minimum risk of distortion. Radial setting adjustment of the three drivers on each faceplate, to suit various sizes of wheel ranging from 23½ in. to 35½ in. dia. under the lip, is carried out simultaneously by hand rotation of a three-armed cam mounted on an extension of the spindle nose.

Compound Type Tool Rests

The two front compound-type tool rests are of powerful design and are equipped with special Craven patented three-position tool turrets, each fitted with three solid form-tools designed to suit the various tread and flange re-turning operations. The arrangement allows a large number of tool re-grinds before replacement becomes necessary. The turrets are locked in position by pneumatic cylinders which, when their action is reversed, also lift the turret heads on ball-race mountings to allow rapid hand rotation between positions.

Each tool rest has longitudinal hand adjustment and variable, self-acting power feed, upon a short intermediate slideway permanently set at an angle corresponding to that of the wheel tread. The whole rest also has transverse hand adjustment upon a base saddle slide secured to the bed at right-



Compressed air-operated tool holders showing the facing, radius, and profile form tools

angles to the machine axis, for application of the cut and for side facing operations. Handwheels for both motions are elevated to a convenient position for the operator. Rapid power traverse, by two separate ¼-h.p. reversing motors, is included for both the longitudinal and the transverse traverse of each tool rest.

Feed motion is derived from the main bed shaft and is transmitted by gearing to a feed shaft along the front of the bed, and thence by bevel gears to a single continuously-rotating crankplate. Separate connecting rods convey the motion to a ratchet box on each slide rest where it is directed by clutches and gearing to the top slide. Six longitudinal feeds are provided ranging from $\frac{1}{16}$ to $\frac{1}{8}$ in. for each revolution of the faceplates. A disengaging clutch in the drive to the feed shaft enables the whole feed motion to be at rest while the remainder of the machine is in motion, and is included primarily for use in the event of grinding being added later.

As installed at Acton, the machine is situated in a pit so that the top of its bed is slightly below the level of the workshop floor. With the headstocks in their outer position, the wheel set is rolled, upon extensions of the workshop rails and matching rails atached to the tool rest bases, into position immediately beneath the machine axis. The wheel set is raised by pneumatic hoist into line with headstock centres. The headstocks are then returned by power to positioning stops, at which point the friction discs in the traverse mechanism commence to slip.

Only a slight final adjustment of the spindle barrel is now required to ensure that the collets firmly grip the axle journals. Control of the main motor is embodied in a portable pedestal station at the front of the machine and comprises "start," "stop" and "inch" push-buttons, together with a speed "slow down" button—reducing the motor speed to half its slowest speed for use when dealing with hard spots in the wheel tyres—and "accelerate" and "retard" buttons for speed variation.

An additional main motor "inching" control button is located on the rear of each headstock, together with "forward" and "reverse" buttons for the respective headstock traverse motor. Electrical interlocking ensures that the main motor will not run continuously unless the two headstocks are locked in position, although it allows the "inching" motion to function in these circumstances. Moreover, the headstock traverse motors will not start until the headstocks are unlocked. Limit switches are provided to prevent overrun of the headstocks on their outer traverse.

All the bearings and gears in the headstocks are lubricated by positively-driven, multi-delivery, plunger pumps, and an automatic oiling system lubricates the headstock slideways each time the locking or unlocking motion operates. Further hand-operated oil pumps supply the bed shaft bearings.

IMPORT DUTY FOR SLEEPERS REDUCED.—The Treasury has made the Import Duties (General Ad Valorem Duty Reduction) Order, 1952, which alters the general ad valorem duty of 10 per cent., chargeable under the Import Duties Act, 1932, on railway sleepers and sleeper blocks imported in the form of square-sawn timber of coniferous species, not further prepared or manufactured, to 8s. per standard of 165 cu. ft. The Order, which came into operation on May 26, has been published as Statutory Instruments 1952, No. 996.

INTERNATIONAL SLEEPING CAR COMPANY.—The number of passengers who used the sleeping, Pullman, restaurant, or buffet cars of the Cie. Internationale des Wagons-Lits in 1951 was about the same as in 1950. Car-days, however, fell from 327,407 in 1950 to 313,281, largely because of termination of the company's services in certain "Iron Curtain" countries, and of withdrawal of some unremunerative restaurant car services. During 1951, the company was affected by increases in wages and prices, and in taxation in all the countries served by it; its tariffs therefore had to be adjusted accordingly. Because of the time-lag between increases and introduction of the revised tariffs, there were temporary discrepancies between expenditure and receipts. The net working surplus for 1951, nevertheless, at B.fr. 204,272,990 was slightly above the total of B.fr. 204,109,427 under this head in 1950.

NEW JONES CRANE AT OLYMPIA.—The Mechanical Handling Exhibition at Olympia from June 4 to 14 will this year include for the first time the new Jones "KL66" crane with maximum load of six tons. Other products of the "600" group of companies will include Jones cranes with capacities from four tons to 15 cwt., together with many types of lifting equipment ranging from pulley blocks to portable gantries for loads of from one to five tons.

INTERNATIONAL MACHINE TOOL EXHIBITION.—The 1952 International Machine Tool Exhibition, organised by the Machine Tool Trades Association, will be held at Olympia between September 17 and October 4. The opening hours are to be from 9.30 a.m. to 6 p.m. on every day, except Sundays. The machines to be assembled will number approximately 2,000 and countries represented at the Exhibition will include Great Britain, U.S.A., France, Belgium, Italy, Germany, Switzerland, and Scandinavia. A service centre and enclosed lounge will be located on the second floor of the Empire Hall, where amenities will include an information bureau, a free service of interpreters, banking facilities, a stenographers' bureau, and facilities for making direct contact with foreign countries by cable and telephone.

RAILWAY BENEVOLENT INSTITUTION.—At a meeting of the Institution on May 21 the Board granted annuities to five widows and one member, involving an additional liability of £93 5s. per annum. Grants of 32 gratuities were also made, amounting to £395 10s., to meet cases of immediate necessity. Grants made from the Casualty Fund during April amounted to a total sum of £758 17s. 6d.

SUMMER SERVICES BY LOCH LOMOND STEAMERS. — British Railways pleasure steamer sailings on Loch Lomond began for the summer season on May 26. They will continue until September 29; Sunday sailings operate from June 8 to September 28. Express train services run between Glasgow and Balloch Pier in connection with the steamer sailings on Loch Lomond, and cheap day tickets are issued. There are special excursion fares at weekends for the afternoon trips leaving Balloch Pier at 3.55 p.m. on Saturdays and 3.15 p.m. on Sundays.

RAILWAY NEWS SECTION

PERSONAL

Mr. N. N. Majumdar, Financial Adviser & Chief Accounts Officer, Chittaranjan Locomotive Works, Indian Railways, has been appointed General Manager of the Works, in succession to Mr. P. C. Mukerjee.

Mr. B. K. De, B.A., Commercial Traffic Manager, Bengal Nagpur Railway, India, who, as recorded in our April 4 issue, has proceeded on leave preparatory to retirement, was born in 1897 and educated at the Presidency College, Calcutta; the London School of Economics; and Trinity College, Cambridge. He was appointed an Assistant Traffic Superintendent on the Bengal Nagpur Railway in 1921 and in 1929 was on special duty as a Traffic Officer. He officiated in the senior scale several times after 1929 and was confirmed as District Commercial Officer in 1934. Mr. De went on special duty as Senior Scale Officer on a traffic re-survey in 1935-36 and after officiating in the junior administrative grade, was confirmed in that grade in 1947. He officiated as Commercial Traffic Manager on two occasions between 1946-48 and was on deputation as Regional Controller of Railway Priorities from October, 1948. He took charge as Commercial Traffic Manager in 1949 and was confirmed in that post in 1950.

Mr. B. K. De
Commercial Traffic Manager, Bengal Nagpur Railway, India, 1949-52

We regret to record the death on May 14, in his 66th year, of Dr. Ernst Frölich, who retired from the service of the German Railway rather over a year ago. His name will always be connected with the improvement of marshalling yard technique, as he designed the type of railbrake which carries his name. As a consequence of his brake's success in several German railway yards, the possibility of its adoption by the British railways was examined in 1926-1927, with the result that the L.N.E.R. adopted the design for its new Whitemoor Yard and later the Inwards Yard at Hull. More recently, the Frölich system was installed at Toton yard, L.M.S.R., and within the last year Dr. Frölich visited the new Toton Up Yard, where his design of brake has been installed. Dr. Frölich was born in January, 1887, and attained the rank of Reichsbahnrat on the German Railway in 1921 and Ober-Reichsbahnrat in 1935, at which period he was District Engineer, Berlin West. He had many friends on the British railways and amongst private firms — notably Metropolitan - Vickers - GRS. Limited, who are agents for his railbrakes.

Mr. S. Stevens
Appointed District Engineer, London, Western Region

Mr. S. Stevens, M.Sc.(Eng.)(Lond.), A.M.I.C.E., M.I.Struct.E., M.Inst.W., District Engineer, Newport, Western Region, who, as recorded in our May 16 issue, has been appointed District Engineer, London, studied civil and municipal engineering at the University of London, University College, where he graduated with first class honours in civil engineering and gained the Vernon Harcourt Civil Engineering Prize. In September, 1929, following a period with a Consulting Engineer, he joined the G.W.R. in the Steelwork Department, Chief Engineer's Office. In 1932 he was posted to the Eastern Ports Division, South Wales, and in 1937 was appointed Resident Assistant Engineer at Port Talbot Docks. Mr. Stevens was appointed Resident Assistant Engineer, Cardiff Docks, from October, 1939, but was mobilised before he could assume that position. As a subaltern in 151 (G.W.) Railway Construction Company, R.E. (S.R.), he saw service in France from September, 1939. After a short period of home service, he was posted in January, 1941, as Deputy Assistant Director of Transportation in Egypt, with the rank of Major, and was appointed Assistant Director of Transportation, G.H.Q., Middle East Forces (Lt.-Colonel) in October, 1941. In 1942 he assumed responsibility under the Director of Transportation for railway civil engineering works and the engineering planning of port facilities throughout Middle East Command. Two years later he was posted to England to become Deputy Director (Railway Construction), Control Commission for Germany, with the rank of Colonel, until released from military service in September, 1945. He was twice mentioned in dispatches. Returning to the G.W.R., he was appointed Assistant Divisional Engineer, Cardiff Valleys, and transferred to London in the same capacity in April, 1946. He was appointed Divisional Engineer, Newport, in 1949, a post later redesignated District Engineer, Newport.

Mr. H. G. Lakeman
Appointed District Engineer, Bristol, Western Region

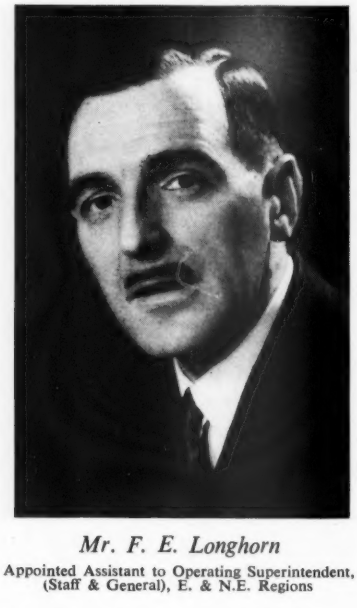
Mr. H. G. Lakeman, A.C.G.I., B.Sc.(Eng.), A.M.I.C.E., District Engineer, Cardiff Valleys, Western Region, who, as recorded in our May 16 issue, has been appointed District Engineer, Bristol, was educated at Kingsbridge Grammar School, Devon, and after gaining an exhibition in science, proceeded to the City & Guilds Engineering College of the Imperial College of Science & Technology, where he obtained an honours degree in engineering and was awarded the Diploma of Associateship of the City & Guilds of London Institute. He entered the service of the G.W.R. in the Divisional Engineer's Office at Plymouth, in 1923, and subsequently transferred to the South Wales Docks, where he held the position of Resident Assistant Engineer at Port Talbot and Cardiff Docks. In 1939 Mr. Lakeman was appointed Assistant Divisional Dock Engineer, Eastern Area Ports, at Barry; in 1945, Assistant Divisional Engineer, Newport, and in 1949, District Engineer, Cardiff Valleys.

The Eastern Region of British Railways has announced the appointment of Mr. G. Ford, District Motive Power Superintendent, Southend (Plaistow), as District Motive Power Superintendent, Sheffield.

The Vacuum Oil Co. Ltd. has announced that in connection with the intended formation of a new and enlarged Technical Department, Dr. R. B. Killingsworth is being seconded to that company on a long-term basis by Socony-Vacuum Oil Co. Inc., of New York, as Manager of the new Technical Department.

Mr. M. G. Maycock

Appointed Assistant Civil Engineer, Scottish Region



Mr. F. E. Longhorn

Appointed Assistant to Operating Superintendent, (Staff & General), E. & N.E. Regions

Mr. H. Vernon

Appointed Assistant (Signalling) to Operating Superintendent, L.M. Region

Mr. M. G. Maycock, B.Sc.(Eng.), A.M.I.C.E., Assistant Engineer (Permanent Way), Eastern Region, London (Kings Cross), who, as recorded in our April 4 issue, has been appointed Assistant Civil Engineer, Scottish Region, was educated at Stoneyhurst College and graduated B.Sc.(Engineering) at London University. He was elected to Associate Membership of the Institution of Civil Engineers in 1926. He joined the North Eastern Railway in 1915 in the Engineer's Department at York, and after serving in a number of districts and in various sections at headquarters, he was appointed Permanent Way Assistant, York, L.N.E.R., in 1937, and later took charge of the New Works Section. Mr. Maycock subsequently became Assistant District Engineer, Darlington (1939); Assistant to Engineer (Maintenance), York (1943); Assistant Engineer, Scottish Area, L.N.E.R., Edinburgh (1945); District Engineer, London (Kings Cross) (1948); and Assistant Engineer (Permanent Way), Eastern Region (1950).

Mr. Herbert Greig, General Assistant to Commercial Superintendent, Scottish Region, has been appointed Assistant to Commercial Superintendent (Goods), Scottish Region.

New Zealand Government Railways

The following staff changes have been announced by the New Zealand Government Railways:—

Mr. R. V. Fredric, Manager of Road Services, Wellington District, to be Superintendent of Road Services, in succession to Mr. P. A. Taylor, who has retired.

Mr. R. Watkins, Assistant Superintendent of Road Services, has retired.

Mr. P. W. Gasson, Assistant Comptroller of Refreshments, to be Comptroller of Refreshments, in succession to Mr. W. Elsom, who has retired.

Mr. J. J. Anderson, Transport Officer, Dunedin, to be District Traffic Manager, Christchurch, in succession to Mr. W. A. Breach, who has retired.

Mr. J. F. Ericson, Assistant Traffic Manager, Dunedin, to succeed Mr. W. H. Preston, retiring, as District Traffic Manager, Invercargill.

Mr. F. E. Longhorn, Senior Staff Clerk, Operating Superintendent's Office, Eastern & North Eastern Regions, Marylebone, who, as recorded in our May 9 issue, has been appointed Assistant to Operating Superintendent (Staff & General), Eastern & North Eastern Regions, Marylebone, was educated at Middlesbrough High School and joined the L.N.E.R. in 1927. After occupying a number of posts in the Passenger Department, he was engaged on special duties from 1939. He was subsequently employed as a relief clerk and relief stationmaster and appointments in the Joint Staff Section of the District Superintendent and District Locomotive Superintendent, Darlington, followed; in 1945 Mr. Longhorn took up the position of senior wages staff questions clerk in the Joint Staff Section of the District Superintendent, District Locomotive Superintendent and District Passenger Manager, York. In 1948 Mr. Longhorn became wages staff questions clerk in the Office of the Superintendent and Locomotive Running Superintendent, York, and in 1949 was appointed Head of the Locomotive Wages Grade Sub-Section of the Joint Staff Office of the Motive Power Superintendent and Divisional Operating Superintendent, York. He was transferred to London in 1950 as Senior Staff Clerk in the Office of the Operating Superintendent, Eastern & North Eastern Regions, Marylebone.

Lord Cunliffe has been appointed an additional Director of the Brush Electrical Engineering Co. Ltd.

Mr. H. B. Luckcuck has been appointed Managing Director of Quicktho (1928) Limited. Mr. Luckcuck, who has been a Director since 1931, has been Secretary of the company since its foundation in 1928.

London Transport Appointments

The following appointments have been announced by the London Transport Executive:—

Mr. J. G. Bruce, Progress & Planning Engineer (Acton Works), as Acting Assistant Mechanical Engineer (Works).

Mr. G. Clark, Acting Production Engineer, as Production Engineer (Acton Works).

Mr. H. Vernon, Assistant (Signalling) Operating Superintendent's Office, Euston, London Midland Region, who, as recorded in our May 16 issue, has been appointed Assistant (Signalling) to the Operating Superintendent, London Midland Region, was educated at Hartford and at Northwich Verdin Technical School and joined the railway as a junior clerk at Runcorn in 1913. After service in the first world war with the Royal Engineers in France, he returned to the railway service and worked at Middlewich, Hartford and other stations in Cheshire and Lancashire and obtained the Royal Society of Arts certificates in railway law and practice, and railway economics. In 1924 he was appointed Stationmaster at Collins Green and when in this position won the first prize with distinction in the stationmaster's class at the Manchester School of Signalling. In 1929 Mr. Vernon was promoted Relief Stationmaster in the Birmingham district and later that year was appointed Assistant District Signalmens' Inspector at New Street Station, Birmingham. He moved to Buxton in 1931 as District Signalmen's Inspector and in 1932 was appointed to a similar position at Derby. Eight years later he was Assistant District Controller at Gowhole near Chinley and in 1941 was appointed Head Office Inspector at Divisional headquarters Derby. Between 1946-51 Mr. Vernon was Outdoor Assistant to the Divisional Superintendent of Operation at Derby and was engaged on signalling, new works and private sidings schemes, until promoted Assistant (Signalling), Operating Superintendent's Office, Euston.

Mr. A. C. B. Pickford, Executive Officer (Terminals), Railway Executive, is among the members of the Provisional Council of the Institute of Material Handling, the formation of which was decided at a recent meeting of users and manufacturers of mechanical handling equipment.

Mr. Charles Ramsden, Overseas Director of the Federation of British Industries, has retired after 33 years' service with the Federation. He is succeeded by Mr. Peter Tennant who, in March, joined the F.B.I. as Deputy Overseas Director.

The Crown Agents for the Colonies

An explanation of their functions and responsibilities by Mr. A. Campbell

Mr. Archibald Campbell, C.B.E., Chief Mechanical Engineer to the Crown Agents for the Colonies, was the principal guest at the monthly dinner of the Transportation Club which was held at 44, Wilton Crescent, S.W.1, on May 22. Major-General Gilbert S. Szlumper, the Chairman of the Club, presided and among those present were :—

Messrs. L. B. Alexander, J. E. Beckett, Colonel H. E. Clark, Messrs. C. M. Cock, B. W. C. Cooke, G. R. Curry, R. G. Duncan, G. E. Embleton, Captain B. C. Frost, Lt.-General Sir Humfrey Gale, Commander H. S. A. Gerson, Messrs. G. E. M. Godfrey, T. Greenwood, K. Granville, Colonel H. Gresham, Messrs. R. Gresley, S. G. Hearn, J. A. F. Montgomery, E. J. Morris, M. D. Morrissey, S. Potter, G. E. Putnam, T. W. Royle, C. E. R. Sherrington, Lt.-Colonel K. R. N. Speir, Messrs. G. Sutton, A. J. Turner, John W. Vaughan, C. H. Warrilow, W. Cyril Williams.

The Chairman, in introducing Mr. Campbell, said that although it was not the custom to ask guests to make speeches he was sure that members of the Club would be very interested to hear anything which Mr. Campbell might like to tell them about the office of the Crown Agents for the Colonies of which he was in important member and which played so essential a part in transport supplies throughout the Colonial territories.

Mr. Campbell said that the office of the Crown Agents for the Colonies, now more often referred to as the Crown Agents, was well known throughout the manufacturing industries in the United Kingdom. The office can put out the sign "Established for over one hundred years" as it came into being in April, 1833, under the title of "Joint Agents General for the Crown Colonies" and under that name it continued until 1863 when the name was changed to the "Crown Agents for the Colonies," the subtle difference being in the position of the word "Crown." The office began with 13 Crown Colonies and included such familiar names as New South Wales, South Australia, New Zealand, Cape of Good Hope and Newfoundland, and although many had grown to adult age and left the family circle it still acted as agents for 60 principals. These now comprised, in addition to the Colonies, foreign states, protected states, protectorates, trusteeship territories, university colleges, municipalities, harbour boards, corporations, etc. One of the latest names to be added to the list is that of the Overseas Food Corporation.

Self-Supporting Office

The office was independent in managing itself except for very general supervision by the Secretary of State for the Colonies. It might be described as a cross between a business house and a Government department. The Crown Agents staff were not civil servants, and their office did not and never had cost the British taxpayer one penny. They were engaged in carrying out essential business in this country for Colonial Governments and other overseas authorities to whom they made small charges for some, but by no means all, of the work they did. Thus it was a self-supporting concern but not a profit-making one. In recent years revenue in excess of requirements had been returned to the principals in quite substantial sums, so that one of the more important charges, that of ordering and shipping supplies when the refund was allowed for, was well under one per cent. of the c.i.f. values.

Examples of work done without charge were the payment monthly or quarterly of ten thousand pensions and the booking of twenty thousand sea and air passages yearly. In 1951 the c.i.f. value of supplies shipped to principals was £45,000,000, representing 100,000 orders varying in value from a few shillings to over one million pounds and ranging through almost every variety of goods from heavy engineering products, textiles, medical supplies, paper, coal, currency, stamps and even Royal portraits. The indents for these supplies came from many of the remotest corners of the earth in the assurance that the same service would be available to each, however big or small the requirements. At Millbank there was a laboratory for testing textiles and paper, and also expert examiners for clothing and a packing store for textiles. At the different security printers the Crown Agents had their own staff of experts for passing currency and stamps. In a year they ordered several hundred million stamps in hundreds of denominations.

It would be appreciated from the value of supplies shipped and paid for that the financial side was of some dimension. A constant supply of funds came to the Crown Agents from their principals to pay for these and also millions for pensions, passages, salaries of officers on leave, and dividends on Colonial Government loans. When a Colonial Government wished to raise capital, this was carried out through the Crown Agents and they afterwards managed the loan.

Duties of the C.M.E.

Mr. Campbell went on to say that his official duties covered the whole field of transport—railways, roads, ships and aeroplanes, and, in addition, mechanical handling equipment, machine tools, factory equipment, power plants, telecommunications etc., but perhaps his chief responsibility was that of Colonial railway supplies, for in that sphere, in addition to negotiating and placing contracts his Department carried out the consulting and advisory work in the design of locomotives and rolling stock.

During his 38 years with the Crown Agents it had been his privilege to assist in the development of the Colonial railways and particularly those in the continent of Africa. The years after the first world war and up to the depression in 1930, had witnessed the greatest expansion of railways in the history of the Colonies and, although a similar expansion had not taken place after the second world war, there was every sign that this further period of expansion was due to begin. The years since 1945 had been devoted to replacement and renewal; the world-wide expansion of trade had increased the demands on the Colonial railways and where, in the past, 10 locomotives and 150 wagons had been thought a good order, the Crown Agents were now reaching the stage of 50 and beyond for locomotives and anything from 500 to 1,000 for wagons. The demand still seemed to be expanding.

Not all the Colonial railways had shown expansion; that was due to geographical situation where they were confined to the boundaries of comparatively small islands and the greatest scope for development was in Africa. Cecil Rhodes had had a vision of a Cape to Cairo railway, and his vision had nearly reached the bounds of reality. The expansion of railways in Africa must go ahead rapidly during the next fifty years. That was his view and that of other Crown Agents engineers twenty-five years ago when the Colonial Office, in agreement with the Kenya & Uganda and Tanganyika Railways had sanctioned investigations into the possibility of a standardisation of railway gauge systems in East Africa with that of adjacent territories and so avoid the troubles which had arisen due to this lack of foresight in other continents. They had then commenced consideration of how to adopt those systems so that they would, at some future date, be able to convert to the 3-ft. 6-in. gauge track which by then had shown to be the ultimate standard system in the continent of Africa. During the following years this ground work had been laid down and since then locomotives and rolling stock and ancillary equipment had been constructed with a view to conversion to the 3-ft. 6-in. gauge when the time was opportune.

Standards

From this it seemed natural to pass on to the wide question of standards. The Crown Agents, being the consultants for railways both in East and West Africa, and also Malaya, and in all for fourteen different railway systems throughout the world, it was easy to adopt on several railways the same standard details. The requirements of each individual Chief Mechanical Engineer had to be considered and as changes in these appointments occurred at very short intervals, there was a tendency for each Chief Mechanical Engineer to reject or modify his predecessor's ideas and it was very difficult and required a great deal of tact or forbearance to get over to them the suggestion that they might accept someone else's ideas which would satisfactorily operate on their system. It was a very gradual process but the impetus of the second world war brought it to a head.

At that time the Crown Agents had been criticised by the industries on the number and the variety of locomotives and rolling stock supplied to Crown Agents orders. Variations were now a matter which could be avoided on the plea of expediency; therefore the "powers that be" laid down a general directive calling for the elimination of variety in design and urging something straightforward and simple which could be used by all. This approach had been further emphasised—when America entered the war—by deciding on one type of locomotive and two types of vehicles for operation on all 3-ft. 6-in. and metre gauge systems.

The Crown Agents had been able to assist in these ideas by showing, by means of their East African designs, how simple it was to build locomotives and vehicles of the same type suitable for both gauges and which could eventually be drawn from a pool with very little amendment. This particular locomotive and the two types of wagons had been sent all over the world and had done a very fine job. Although they had been intended to last

only for the period of the war a fair number of them were still operating and earning good revenue for the railways. After the war it had been agreed not to go back to the old way of things, and the Colonial Office had recommended that the Colonial railways should be brought together in conference to discuss possibilities of standardisation of mechanical equipment.

It had naturally fallen to Mr. Campbell's department to organise and bring the idea to fruition, and the first conference had been held in 1950 when all the Colonial railways were invited to attend, including the privately-owned railways operating in Colonial territories, namely in Rhodesia and Nyasaland. The conference had been exploratory; it had achieved a good measure of success, and had been welcomed by all present from overseas. It had been recommended that another one should be held within a short period, and the Crown Agents had been asked to undertake the duties of the Secretariat. The second conference had been held in March and April of this year, and to that conference all the Colonial railways in Africa and in the Federation of Malaya had sent their Chief Mechanical Engineers. Invitations had been also issued to other railways within the Commonwealth operating in Africa, namely, Sudan and South Africa, and these railways responded by sending, in the case of Sudan, the Assistant Chief Mechanical Engineer, and, in the case of South Africa, their Chief Mechanical Engineer. This second conference had been of considerable benefit to all who had attended; they had met each other, they had talked with each other, and the contact would be of everlasting good; the feeling of the delegates was such that they had agreed to meet again in approximately eighteen months.

Mr. Campbell concluded by saying that, in his view, the Colonial railways were in the forefront of railway development and had now operating on their systems locomotives and rolling stock which were second to none.

NEW YORK, ONTARIO & WESTERN RAILWAY.—The operating revenue of the New York, Ontario & Western Railway for the year ended December 31, 1951, was $7,258,526, against $7,101,331 for the previous year; of this, revenue from merchandise traffic amounted to $5,953,392 ($5,410,916), from coal traffic to $961,223 ($1,170,234), and from passenger traffic to $72,020 ($108,303). Operating expenses were $6,486,374 ($6,306,997). Net income was $1,950,263 ($1,995,800).

Demonstration of Lightweight Diesel Train

Trial run of three-car set suitable for branch and main-line stopping services

By arrangement with British Railways, trials are being carried out between Marylebone and Princes Risborough of an experimental lightweight diesel train which has been built recently by A.C.V. Sales Limited. The facilities afforded by British Railways for these trials form part of a special study which the Railway Executive is making of the possibilities of light units generally for developing traffic, and for working it more economically, both on branch lines and on suitable main-line services. As part of the same policy an improved type of steam push-and-pull train is being tried out in the Western Region, on the Ealing and Greenford service.

After the present service trials of the A.C.V. demonstration train, it will be used experimentally on public services on outer London suburban routes during "off-peak" periods.

A demonstration run from Marylebone to Gerrards Cross was made on May 23. The train consists of two motor cars and one trailer, giving a total seating capacity of 129, there being 32 seats in the motor car with guard's and luggage compartment, 52 in the trailer, and 45 in the second motor car. All vehicles measure 40 ft. 3 in. overall and are carried on four wheels. Weight of the three-car set unladen is 39 tons 14 cwt. The steel underframes and engine units were made in the A.E.C. works, and the bodywork at Park Royal Vehicles Limited.

Motor cars can operate singly, in pairs, or with a trailer, provision being made in the design for a trailer driving compartment. The power unit in each motor car is an A.E.C. six-cylinder diesel engine identical with those in the latest Green Line buses, developing 125 b.h.p. at a maximum of 1,800 r.p.m. Top speed is about 45 m.p.h. Engine, transmission, and auxiliaries are carried below the underframe so that the whole of the body is available for seating or luggage.

The drive is transmitted through a Daimler-type fluid flywheel and Wilson epicyclic four-speed gearbox to a final bevel gearbox with reverse gear. A revolution-counter driven from the gearbox, but calibrated in m.p.h., has indications showing the driver when to make gear changes and serves as a speedometer in top gear.

An electro-pneumatic system with B.T.H. magnet valves provides for remote control of the engine and gearbox in the rear-end motor car. The driver's throttle control is hand-operated and acts as a deadman's handle if inadvertently released while running. A stop can be engaged to locate it in the idling position if the driver has to release his hold. On starting, the first gear is selected and the train moves off when the engine is accelerated. Subsequent gear-changes are pre-selected, and engaged by operation of the clutch lever at the appropriate speed.

Two belt-driven Clayton-Dewandre exhausters and a Clayton-Dewandre compressor are fitted to each motor car for vacuum braking and control air supply respectively. A 24V. electrical system provides for engine starting, lighting, and other services. The cab is equipped with a heater and front window de-misting device.

Operating Characteristics

Fuel consumption under variable service conditions is about 11 m.p.g. for each motor car, or 5½ m.p.g. for the three-car train. On the demonstration trip last week the train called at all stations to Gerrards Cross, returning non-stop to Marylebone. Observance of numerous speed restrictions enabled the easy handling and accelerative capabilities of the unit to be appreciated. The riding of the coaches on sharp turn-outs into platform roads and over junctions reminded travellers that they were in four-wheel stock, but was adequate for the speeds and class of service envisaged.

BRITISH STANDARDS YEAR BOOK.—The 1952 edition of the British Standards Year Book has just been published. It contains a complete list of the 1,800 British Standards current at March 31, 1952, with a brief description of the subject matter of each. A subject index simplifies reference. The year book also gives particulars of the membership of the General Council and of the Institution's Divisional Councils and Industry Standards Committees. These committees, 59 in number, each represent a major British industry through whom the work of drafting British Standards is delegated to some 2,200 Technical Committees and sub-committees. In addition 20 Special Committees, some of an advisory category, are also listed. Copies of the Year Book may be obtained from the British Standards Institution, 24, Victoria Street, Westminster, London, S.W.1, price 7s. 6d.

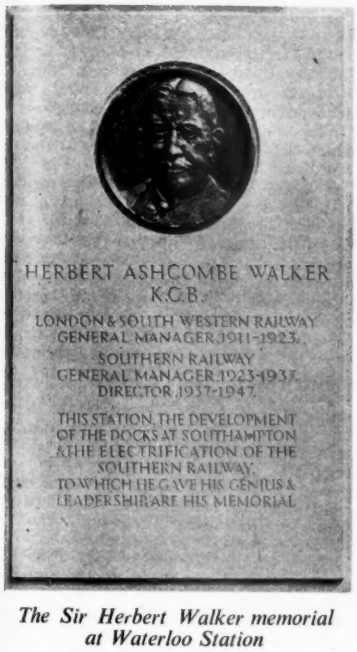
Experimental three-car lightweight diesel train now undergoing trials between Marylebone and Princes Risborough

Memorial to Sir Herbert Walker

Unveiling of memorial tablet at Waterloo Station by Mr. John Elliot

A memorial to the late Sir Herbert Walker, General Manager of the Southern Railway between 1923-37 and afterwards a Director, was unveiled at Waterloo Station by Mr. John Elliot, Chairman of the Railway Executive, on May 27. Sir Francis Dent, a former Director of the Southern Railway, who opened the proceedings, apologised for the absence of Colonel Sir Eric Gore Browne, formerly Chairman of the Southern Railway.

Mr. John Elliot, before unveiling the memorial, which was executed by Mr. Donald Gilbert, said they were met together to honour the memory of Sir Herbert Walker, General Manager—first of the



The Sir Herbert Walker memorial at Waterloo Station

L.S.W.R. and then of the Southern Railway—for 26 crowded and busy years, from 1911 to 1937, and then for a further ten years as a Director. Thirty-six years in all, which saw the beginning and the end of the great railway company with which for all time his name would be linked.

He had always believed in the value of suburban electrification, and he rapidly put it into practice on the South Western. Soon afterwards the first world war was to absorb his main attention. Elected Chairman of the Railway Executive Committee, he presided throughout that war over his colleagues of the other railways, and when it ended, his reputation worthily reflected his heavy labours, which were recognised by a K.C.B. From 1923 onwards he did his greatest work as General Manager of the newly-formed Southern Railway.

Among Sir Herbert Walker's achievements, they remembered how he had faced and solved the problems of unifying three dissimilar railways; his decision to standardise electrification on the third rail, because much had already been carried out on that system; his scheme of complete electrification of all the Southern's suburban lines, relentlessly pursued to its completion, and later of the main lines to the South Coast; his bold expenditure on new works; his grand conception and rapid execution of the great new docks at Southampton; his quick perception of the profitability of the Continental services, of which the "Golden Arrow" and the Dover-Dunkirk Ferry, with its through freight wagons and sleeping cars, were the most notable examples.

In the autumn of 1937 he retired, after one of the most successful railway managerships on record, in which the tremendous economic and social changes and problems of the new Georgian era had been accurately measured by his shrewd and practical mind.

His example should mean much today, when there were immense and urgent problems in the railway world. Were he alive, Sir Herbert Walker would have wanted them faced squarely, with confidence, and above all with goodwill. He would, Mr. Elliot felt certain, want them to stick to their work of making and keeping the railways safe, efficient and profitable, to avoid public controversy, to cherish their colleagues through loyalty to each other, and to bend their energies to the task and the privilege of serving the public with all their long experience and old skill. He would have been glad to hear that in 1951 British Railways had paid its way.

Mr. Elliot and Sir Francis Dent were supported on the platform by Sir Eustace Missenden, Chairman, Railway Executive, 1947-51, and formerly General Manager of the Southern Railway; Mr. Gilbert Szlumper, a former General Manager; and Mr. E. C. Cox, a retired Traffic Manager.

Brush Electrical Engineering Co. Ltd. (Brush Aboe Group)

Sir Ronald W. Matthews on widespread demand

The 63rd annual general meeting of the Brush Electrical Engineering Co. Ltd. was held on May 29 in London, Sir Ronald W. Matthews, D.L. M.Inst.T., Chairman of the Company, presiding. The following are extracts from his circulated statement:—

The orders we have received in 1951 totalling over £40,000,000 (which is more than double the previous record figure of 1950) show that sales have presented no serious problem. We have accordingly been able to effect some economy in our selling costs. Armament orders and exports have naturally taken priority.

Having dealt at length with the consolidation of the Group organisation and the widespread manufacturing activities, the statement continues:—

The products of our Group of Companies are in demand over a very wide field, from the small farmer to the largest Government Authority; from the most highly industrialised country to the most primitive community. We have had some difficulty in dealing adequately with all inquiries, but we have striven nevertheless to maintain a fair balance between rearmament and power shortages at home on the one hand and exports on the other.

The network of overseas agents has been further strengthened by additional appointments, with a consequent increase in the availability of technical service and supply of spare parts on a world-wide basis. The policy of setting up, in the immediate post-war period, a number of subsidiary companies in essential overseas markets has been well rewarded.

The Group now supplies over one-third of the total British exports of diesel engines and diesel-electric generating sets. Indeed, this proportion is very much higher in a number of individual overseas markets where industrial, agricultural and municipal users have come to rely on our power plant to meet a high proportion of their requirements. I am glad to report that this favourable condition exists in a number of Commonwealth markets, while in support of the Government's export policy, an increasing part of our output is being supplied to the difficult dollar markets in the Western Hemisphere.

One particular contract worthy of mention is the electrification of the Holy City of Mecca, in respect of which an order was placed by the Saudi Electric Company following the successful electrification of the city of Taif.

Our established policy has been followed in extending our resources for scientific investigation with the object of increasing the contribution which our laboratories can make towards improved production and higher standards of quality in our products.

Twelve months of intensive labour in the fields of research, development and production have established even more firmly the position of the Group throughout the markets of the world. It has not been an easy year, nor can we be justified in anticipating an easier passage in the months that lie ahead, but I have every confidence in the ability of the management to grapple successfully with each individual problem as it arises.

The report and accounts were adopted.

G.N.R.(I.) Air Bookings

At the end of its financial year British European Airways disclosed that the Great Northern Railway (Ireland)—one of its largest agencies in Ireland—had shown an increase in air passenger bookings of over £2,500. To mark its appreciation of the enthusiasm shown by the railway officials engaged on the work, British European Airways have invited the stationmasters at the three stations which secured the highest results, to be their guests for a day, which will include a cross-Channel flight in one of the company's latest aircraft. The stationmasters are Mr. G. Agnew (Enniskillen), Mr. R. McKee (Cookstown), and Mr. S. J. Rogers (Banbridge).

The G.N.R.(I.) station in Belfast is the only joint rail and air terminus in Ireland. The B.E.A. passenger and freight depot is on the station premises near the Glengall Street exit; from it buses operate to and from Nutts Corner, one of the busiest airports in the United Kingdom. It is possible to book from any of the 150 G.N.R.(I.) stations to all British, Commonwealth and Continental Airports served by B.E.A. The G.N.R.(I.) is also agent for Aer Lingus and makes bookings through Dublin to British and Continental Airports by Aer Lingus routes.

Parliamentary Notes

Transport White Paper Debated in House of Commons

Proposals for decentralising railways and establishment of railway co-ordinating authority

The House of Commons on May 21 carried a motion to approve the recent White Paper, setting out the policy of the Government on Transport, by 305 to 283, after an Opposition amendment declaring that the proposals were calculated to destroy a properly integrated transport system had been defeated by 307 to 283.

Mr. A. Lennox-Boyd (Minister of Transport and of Civil Aviation), who opened the debate, commended the White Paper to the House as representing the broad outline of the views of the Government on the problem of transport today. He said the Government had never been in any doubt at all about the views of the majority of the interested parties in transport. They hoped during the preparation of the Bill, and, of course, later still, after the Bill had been published, to have the fullest consultation with all who were concerned both in regard to the proposed new general structure and particular aspects of the Government's proposals.

In regard to the conditions of men on the railways under the proposals of decentralisation, all qestions of labour and pay would, of course, remain a national responsibility for the overall organisation of the railways. As to the men working on the roads, it was the Government's intention to uphold fully and to implement to the letter the provisions of the 1930 Act dealing with hours of work and periods of rest, and the provisions in the 1933 Act dealing with the keeping of records and the obligations that the vehicles should be safe and trustworthy.

Studying Users' Requirements

They would never get a wholly fair balance between road and rail in this world. It seemed to him that it was wrong to concentrate solely on trying to equalise the burden rather than first looking to find out what trade, industry, agriculture and the people needed, and then try to get a transport system to meet those needs. They could not leave road and rail to fight out that ancient battle on their own. If road haulage lost the battle, a large number of private people in the new set-up would go out of business which would be bad for them and bad for the country. But if the railways went out of business, the country would lose an irreplaceable asset.

The Government thought they had designed a plan whereby agreement could take place between road and rail, based on the advantages which each had to offer, and which would not run the risk of ruining the railways. That involved the freeing of long-distance road haulage and the levy, both of which were inseparable from the plan.

The Road Haulage Executive and the Road Passenger Executive would disappear. With the greater devolution of the load on the Railway Executive at headquarters, the load on the Executive would be much lessened. He did not think anyone would deny that with those reduced obligations it would not be necessary still to have a Transport Commission and a Railway Executive exactly as they were. It would, of course, be necessary to have a co-ordinating railway authority. Perhaps it might be along the lines of the old General Managers' Conference. There would also be a top level body, whether the British Transport Commission—under that or some other name—or a similar body to look after broad policy on railways, on London Transport, docks and canals and the equity holding of the Commission in the passenger services. The London Transport Executive would remain, probably but not necessarily as an Executive—perhaps as the old London Passenger Board used to be. The future of the Docks & Harbours Executive and the Hotels Executive would be discussed with the British Transport Commission and it might be that some of their functions might go to the new railway areas.

The scheme-making powers of the Transport Commission in regard to passenger transport would be brought to an end. As for licensing, it would prevail over a diminished field. The road passenger services which the Commission continued to provide would be subject to the ordinary licensing procedure, but those services operating in the London Passenger Transport area would be subject to the old jurisdiction which prevailed in the days of the London Passenger Transport Board only that was, as to rates.

In the course of his remarks on the sale envisaged in the White Paper of road haulage businesses, Mr. Lennox-Boyd was asked by Mr. H. Hynd (Accrington—Lab.), whether, having regard to the fact that something like half the road haulage before nationalisation was owned by the railway companies, it was the intention of the Government to restore that portion of road haulage to the railway companies.

Mr. Lennox-Boyd said the railway companies were divested of their road haulage interest on nationalisation. It was not the intention of the Government that those interests should be restored.

Speaking of the levy, offsetting traffic that might be diverted, as a result of the proposals, from rail to road, the Minister said the Transport Tribunal would have a task, the difficulty of which he did not dispute, to decide when traffic had been so diverted. The sort of things they would ask the Tribunal to consider would be—how far had rail traffic in any one area declined in comparison with the general level of national productivity? How far had there been an increase of road traffic in that area? What evidence was there of actual transfer of contracts from rail to road?

It was not proposed to alter the national ownership of the railways or to undo the Act in that regard. Most railway opinion was in favour of decentralisation. A set-up whereby Railway Executive members had full-time executive functions and gave functional responsibilities to their various members in that way, instead of being merely a policy-guiding and policy making authority, was clearly wrong.

Mr. Lennox-Boyd said he recognised that there had been certain valuable improvements as a result of the centralisation of certain railway services. They recognised the economies and the improvements that had been made, and they would ask the Railway Executive to prepare for the approval of the Government a scheme to be submitted to him on the decentralisation of railway administration. That scheme he would lay before Parliament and there would then be an opportunity to debate it. It would settle the areas. It was their view that the railways must have greater freedom to reduce their charges when they wished in order to attract fresh traffic and, subject to subsequent approval by the Transport Commission, to be able to raise their charges without lengthy delays.

Mr. Herbert Morrison (South Lewisham—Lab.) said that the White Paper was a disgraceful document, full of assertions without proof. It said that the administration of the railways had "become excessively centralised under the Act," and it charged the Road Haulage Executive with having an "elaborate system of depots." He very much doubted whether the railways were much more centralised than they were under the four private companies.

The levy on the road haulage industry, which was to be imposed to assist the railways, was indefensible.

If a Labour Government with a working majority was returned to Parliament after the next General Election, said Mr. Morrison, they would return to public ownership such operable units as were necessary for a co-ordinated transport system. They reserved the right to leave in the hands of private owners services or vehicles which for any reasons were not needed or, because of neglect, were not worth having.

Sir Ralph Glyn (Abingdon—C.) said he still had many friends in the transport industry, and it was a strange fact that he had not met one person who approved of the White Paper. The proposal with regard to the levy was going to be quite disastrous for the relationship between the road and rail services. If road transport was denationalised, he thought that the railways should be denationalised.

The Prime Minister (Mr. Winston Churchill) said the White Paper had been brought out now in plenty of time to enable opinions to be collected and expressed from all quarters, friendly and unfriendly. They would welcome consultations with Lord Hurcomb and his colleagues, and he trusted that they would continue to give the Government their assistance in arriving at the best solution possible. He said he had never been shocked by the idea of nationalising the railways. The railways were and would remain nationalised. The Government believed that in less than the lifetime of this Parliament the benefits of a liberated road transport system, combined with the successful administration of the British Railways, might make it seem a very wrong and foolish thing to renationalise the roads in a future Parliament.

Government Reply to Debate

Replying to the debate after further discussion, Mr. Gurney Braithwaite (Parliamentary Secretary to the Ministry of Transport) said that the railways would, of course, retain their feeder and delivery services. The Government would ask the British Transport Commission to prepare a scheme of decentralisation for the railways, which would be submitted to the Minister of Transport; compensation as it affected the transfer of traffic from rail to road would be the task of the Transport Tribunal. Compensation for the employees would be financed out of the despised levy.

Questions in Parliament

British Transport Commission Revenue

Mr. Ernest Davies (East Enfield—Lab.) on May 26 asked the Minister of Transport, by what amount the revenue from British Transport Commission passenger services in the London area, including those of London Transport and the suburban lines of British Railways, was estimated to increase in a full year, following the fare increases that took place on March 2, and how much of that increase represented rises in sub-standard and concessionary fares.

Mr. A. T. Lennox-Boyd (Minister of Transport) wrote in reply: Revenue from the British Transport Commission's passenger services in the London area, including those of London Transport and on the suburban lines of British Railways, was estimated to be increased in a full year following the fare increases on March 2 by £12½ m. Of this amount I am informed that some £1¼ m. represents the special increase in sub-standard and concessionary fares additional to the normal increase.

Mr. Ernest Davies on May 26 asked the Minister of Transport if he would now state the terms of reference to the Central Transport Consultative Committee in regard to sub-standard and concessionary fares.

Mr. A. T. Lennox-Boyd wrote in reply: The proposals which the British Transport Commission have submitted for modification of certain fare increases raise points which will require further discussion. I am therefore not yet in a position to make any statement about a reference to the Central Transport Consultative Committee.

Railway Executive and Road Carrier Businesses

Mr. P. F. Remnant (Wokingham—C.) on May 26 asked the Minister of Transport what instructions he had issued on the taking over of further road carrier businesses by the Railway Executive.

Mr. A. T. Lennox-Boyd wrote in reply: None. I have no reason to believe that any such acquisitions are in contemplation.

Marylebone Station as Coach Park

Sir Wavell Wakefield (St. Marylebone—C.) on May 26 asked the Minister of Transport if he was aware of the need for suitable coach parking places at weekends in North-West Central London to assist the Metropolitan Police in traffic control; and if he would consult with the Commissioner of Police and the Railway Executive with a view to the use of St. Marylebone Station, which was deserted at weekends, and would appear to be suitable for such a purpose.

Mr. Gurney Braithwaite (Parliamentary Secretary to the Ministry of Transport) wrote in reply: We are doing what we can to help operators, whose responsibility it is to find a site for a permanent coach station in North London. If Sir Wavell Wakefield would let me have details of the site he has in mind at St. Marylebone Station, I will have enquiries made to see if it is suitable.

Manila Railways Debentures

Mr. W. Teeling (Brighton, Pavilion—Con.) on May 23 asked the Secretary of State for Foreign Affairs what further information he had concerning the repayment to British holders of the arrears on Manila Railways debentures; and what steps he would take to make sure that no moneys would be granted by the Economic Co-operation Administration to the Manila Railways Company until these debentures had been repaid.

Mr. Selwyn Lloyd (Minister of State for Foreign Affairs) wrote in reply: I have nothing to add to the reply given by Mr. Anthony Nutting (Parliamentary Under-Secretary of State) on February 27. Her Majesty's Government greatly hope that the Philippine authorities will take steps to facilitate payment of the moneys which have now been due for a considerable time to the British bond-holders. With regard to the second part of Mr. Teeling's question, Her Majesty's Government are not concerned with arrangements for the disbursement of moneys in the Philippines either by the United States Economic Co-operation Administration or its successor the Mutual Security Agency at the present time.

Staff & Labour Matters

Railwaymen's Wage Claim

The claim for a 10 per cent. increase in rates of pay of salaried and concilation staff, and for enhanced payment for time worked after noon on Saturdays, was discussed at a meeting on May 23, between representatives of the N.U.R., A.S.L.E. & F. and T.S.S.A. and representatives of the Railway Executive.

The union's application is based on the continuing rise in the cost of living and the inadequacy of the present rates of pay. After hearing the unions' case the Railway Executive informed their representatives that they would consider their submissions and give a reply at an early date.

Contracts & Tenders

The South African Railways have placed an order with Dorman Long (South Africa) Limited for 1,300 bogie high-side wagons, type " B22."

The Board of Trade, Special Register Information Service, states that the South African Railways have issued a call for tenders for the supply of 3,500 couplings, vacuum hose, 1½ in. dia., and 100,000 couplings, vacuum hose, 2 in. dia. Tenders must reach the Chairman of the Tender Board, Johannesburg, before 9 a.m. on June 19. A copy of the tender documents has been available for inspection by representatives of United Kingdom firms at the Board of Trade, Commercial Relations & Exports Department, until today, May 30, and is now available on loan to manufacturers in order of written application. Reference C.R.E./18802/52 should be quoted.

The Commercial Secretariat at Bangkok has notified the Board of Trade, Commercial Relations & Exports Department, of a call for tenders issued by the Thailand Railways for the supply of ten bogie water-tank wagons and five bogie oil-tank wagons. Tenders should reach the Office of the Stores Superintendent, Thailand Railways, Bangkok, before 2 p.m. on July 10. A copy of the tender documents and drawings is available for inspection at the Board of Trade, Commercial Relations & Exports Department. A further copy of the tender documents only is available for loan to United Kingdom manufacturers in order of written application. Reference C.R.E./19070/52 should be quoted.

The Bombay Port Trust, India, has issued a call for tenders for various locomotive spare parts, including axleboxes, drawbar hooks, and springs, acording to a recent report by the Board of Trade Special Register Information Service. Tenders should reach the Controller of Stores, Bombay Port Trust, by 3 p.m. on Thursday, July 3. A copy of the tender documents is available for inspection by representatives of United Kingdom manufacturers at the Board of Trade, Commercial Relations & Exports Department. A further copy is available for loan to United Kingdom manufacturers in order of application to the Department. Reference C.R.E./17491/52 should be quoted.

Notes and News

International Institute of Welding.—The International Institute of Welding is holding its annual meeting in Gothenburg, Sweden, from September 7 to 13, by invitation of its Swedish member societies.

Vacancy for Junior Draughtsman.—Applications are invited for the post of junior draughtsman, under 25 years of age, required by an East Midlands firm of railway permanent way engineers. See Official Notices on page 615.

Extra Weekend Trains.—To cater for the heavy passenger traffic caused by the fine weather and the start of the holiday season, British Railways ran 195 additional trains on Saturday and Sunday, May 24-25, over and above those already programmed.

English Electric Publicity Address Change.—From Monday, May 26, the London Section of the Publicity Department of the English Electric Co. Ltd. has been located at Marconi House, 336-7, Strand, London, W.C.2. (Telephone No.: TEMple Bar 1577).

Crown Agents for the Colonies.—Applications are invited for the posts of senior assistant traffic superintendent and an accountant required by the Government of the Federation of Malaya for the railway department for one tour of three years with prospect of pensionable employment. See Official Notices on page 615.

B.R. Coal, Iron, and Steel Carryings.—British Railways again increased their week's clearance of coal from deep mined pits and opencast sites compared with the previous week. The tonnage conveyed was 3,229,610, including 315,040 tons during the 48 hours up to 6 a.m. on May 26. The latest figures for iron and steel show that 203,543 tons were conveyed from the principal steelworks during the week ended May 17.

Eastern Region Whitsun Trains.—During the Whitsun holiday weekend the Eastern Region of British Railways will run 313 additional trains. Today (Friday) is the peak, with eleven extras from Kings Cross to Newcastle, nine to Leeds and Bradford, and five from Liverpool Street to Clacton among the 47 additional services from London. A number of cross-country services is being duplicated during the holiday. Seat reservation facilities have been extended to many of the relief trains.

Ministry of Transport War Memorial.—Completion of repairs to the front hall of Berkeley Square House, London, W.1, has made it possible to put the Ministry of Transport War Memorial in place. A short ceremony will take place there at 11 a.m. on Wednesday, June 4, when Lord

Leathers, who was Minister of War Transport from 1941 to 1945, will unveil the memorial and the Venerable Mervyn Armstrong, Archdeacon of Stow, who was the Minister's adviser on Seamen's Welfare, will conduct a service of dedication. Wartime members of the Ministry staff will be welcome at the ceremony.

Spanish Train Fire.—Thirteen persons were burned to death and two others seriously injured on May 20 when eleven wagons containing petrol broke away from a train near Santiago de Compostela, Galicia, Spain, and ran into a Madrid-Santiago express, setting it on fire.

Pallets and Pallet Moving Equipment at Olympia.—A full range of Matling hand, petrol and battery pallet trucks and stackers, as well as Rollsec pallets manufactured by the A.B.C. Coupler & Engineering Co. Ltd., Wolverhampton, will be shown and demonstrated on the stand of Matling Limited, No. H.2, at the Mechanical Handling Exhibition at Olympia next week.

Rebuilding at Hull Docks.—The Docks & Inland Waterways Executive announces that authority has been given for the rebuilding of No. 1 Shed, Humber Dock, Hull, at a cost of about £16,000. The original building, which was a single-storey wooden shed, was destroyed by fire last summer. The new shed, which will also have one storey, will be constructed of pre-cast reinforced concrete framing, brick panel walls, sliding doors, and asbestos roof with Perspex sheet lights.

South Siberian Railway.—Work is proceeding, according to reports in the Soviet Press, on the South Siberian Railway, which is to provide a direct link between the Kutznetsk coalfields and the metal-producing regions of the South Urals, joining the existing system in the west of Akmolinsk. About 1,000 km. of track are reported to have been laid so far, and the section between Stalinsk and Barnaul, about 175 km. in length, has now been opened to traffic.

Queensland Branch of Institute of Transport.—In response to a petition from members of the Institute of Transport in Queensland, the Council has given approval for the formation of a new branch of the Institute, to be known as the Queensland Section. The petition was handed to Mr. A. B. B. Valentine, the President, during his recent tour of Australia, on the occasion of a luncheon given by the members in Queensland on April 7, with Mr. S. L. Quinn, General Manager, Brisbane City Transport, in the Chair. The Queensland Section will be the third branch of the Institute in Australia. The New South Wales Section was formed in 1934 and the Victorian Section in 1949. There is also a Graduate & Student Society for Sydney & District.

Western Region Whitsun Services.—Western Region plans for the Whitsun holiday include the running of over 240 special long-distance trains during the weekend Friday, May 30, to Tuesday, June 3. Of these, nearly 70 extra trains will leave Paddington for the West Country, South Wales and the Midlands; a similar number being booked in to Paddington during the holiday period. Cross-country services will be augmented by over 100 relief trains. On and from Saturday, May 31, a steamer will leave Weymouth each weekday at 1 p.m. for the Channel Islands, in connection with the 8.45 a.m. train from Paddington. A return service will leave Jersey at 8.30 a.m. and Guernsey at 10.15 a.m. for Weymouth Quay, with a connecting train due at Paddington at 7.35 p.m. Excursions on Whit Sunday include trips to Herne Bay and Margate from High Wycombe and stations to Greenford; and to Southampton and Bournemouth from stations Southall to Reading.

Thornycroft Old Pupils' Association.—Some 30 members of the Thornycroft Old Pupils' Association were the guests of the Directors of John I. Thornycroft & Co. Ltd. recently. After a tour of the Woolston shipyard and engineering works the party proceeded by water to the company's Northam repair yard and later were taken for a cruise round Southampton Docks.

Southern Region Enginemen's Quiz Competition.—Eastleigh Mutual Improvement Class beat Gillingham (Kent) in the Regional finals of the Quiz Contest in London on May 14. Mr. T. E. Chrimes, Motive Power Superintendent, Southern Region, who was the Question Master, presented each of the members of the winning team with a fountain pen as personal prizes. This team will now represent the Region in the contest for the British Railways Championship, which will take place shortly.

Principles of Lubrication.—A film entitled "The Basic Principles of Lubrication," which has recently been produced for the Esso Petroleum Co. Ltd. by Technical & Scientific Films Limited, was shown at the British Council Theatre, London, W.1, on May 22. The film is a lucid and definitive exposition of the basic principles of lubrication, and is divided into four parts, dealing with friction, fluid-film lubrication, boundary lubrication, and extreme pressure lubrication. Full use is made of laboratory experiments, micro-photography, animated diagrams and radio-active techniques. Throughout the planning, making and editing of the film, Dr. F. P. Bowden acted as Scientific Adviser. The Esso Petroleum Co. Ltd. will use the film for instructional and training purposes within its organisation. Copies will also be available for exhibition to audiences at universities, technical colleges, research organisations, trade associations and societies and others to whom it may be of interest and value.

R.H.E. Fuel Economy Poster

One of two posters enjoining care in handling fuel now displayed at depots of the Road Haulage Executive as a contribution to the British Transport Commission's economy campaign

N.E. Region Whitsun Trains.—At the Whitsun holiday weekend the N.E. Region of British Railways is running 229 excursion trains and 281 reliefs to regular services. Scarborough is the destination for 33 excursions, Blackpool for 27, and Bridlington and Morecambe for 22 each. Seven reliefs are being run on services between the Region and the Eastern Counties.

Birmingham Railway Carriage & Wagon Co. Ltd.—Record results for the past year have been announced by the Birmingham Railway Carriage & Wagon Co. Ltd., the accounts showing a trading profit of £396,149, compared with £365,216 in the previous year. Net profit after taxation is £160,614, as against £172,654 for the preceding 12 months.

Holiday Runabout Tickets, Eastern Region.—The Eastern Region announces that holiday runabout tickets are available again in eleven selected districts of the Eastern Counties at 20s. each (except Area 10, 27s. 6d.) until October 31. They are issued on any day at any of the principal stations in the area covered by the ticket, and are available for seven days. For this period passengers enjoy the facility of unlimited travel over the portion of the line covered by the ticket.

Canadian Locomotive Co. Ltd. Dividend.—The Canadian Locomotive Co. Ltd. has announced that it has been decided not to pay a dividend on June 1, because of the heavy expenditure necessitated by the conversion of the plant from steam to diesel and desirability of conserving working capital for inventory requirements. The company also omitted the quarterly dividend which would have been payable on March 1 last. For the year 1951 the company reported a net loss of $580,294. There are 179,596 issued shares.

Safety Ban on "Spotting" at Stafford.—In the interests of safety, British Railways, London Midland Region, has announced that in future it will be unable to allow youths and children to remain on the platforms at Stafford for the purpose of engine spotting and watching trains. For some time children have been arriving at Stafford Station at weekends and during the school holidays in such large numbers that there is danger as well as interference with the proper working of the station. A London Midland official has stated that this step has been taken with regret.

Skefko Ball Bearing Co. Ltd.—Presiding at the annual general meeting of the Skefko Ball Bearing Co. Ltd. on April 29, Sir Ralph G. C. Glyn, Chairman of the company, said that faced with increases in the prices of materials and wage advances during 1951, they found that current assets called for a much larger allocation of available cash resources than was anticipated and increases in taxation made still further inroads into cash balances.

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

REQUIRED for the Southern Railway of Peru. Locomotive, Carriage and Wagon Senior Draughtsman 30/35 years of age. Qualifications: Must have served a full general apprenticeship in an Engineering workshop (preferably Railway) and have had at least five years' drawing office experience with some time in an executive capacity. A knowledge of Spanish an advantage. Future prospects. Apply to the Secretary, PERUVIAN CORPORATION LIMITED, 144, Leadenhall Street, London, E.C.3.

RAILWAY SIGNALLING AND COMMUNICATIONS INSTALLATION AND MAINTENANCE. A practical guide, especially, intended to help Signal Inspectors, Installers, Fitters, Linesmen, Draughtsmen, and all concerned with installing and maintaining Signal, Telegraph, and Telephone Equipment. 416 pp. Many illustrations. Cloth. 8*s*. By post 8*s*. 6*d*. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiments. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2*s*. Post free 2*s*. 3*d*. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

N.E.R. HISTORY.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10*s*. 6*d*.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

CROWN AGENTS FOR THE COLONIES

QUALIFIED candidates are invited to apply for the following posts:—SENIOR ASSISTANT TRAFFIC SUPERINTENDENT (M.27696.E.) required by the Government of the Federation of Malaya for the Railway Department for one tour of three years with prospect of pensionable employment. Salary (including expatriation pay) payable in local currency equivalent at present Government rate of exchange to £742 rising to £1,652 a year. Cost of living allowance equivalent to between £336 and £707 a year according to salary and dependents. Commencing salary according to age and experience. Free passages. Liberal leave on full salary. Candidates between 25 and 35 years of age must be Associate Members of the Institute of Transport or hold equivalent professional or academic qualifications. They should have served as special Apprentices with a Railway and have had considerable subsequent experience in both Traffic Operating and Commercial Work, with a sound knowledge of modern railway rating practice.

ACCOUNTANT (M.27923.E.) required by the Government of the Federation of Malaya for the Railway Department for one tour of three years with prospect of pensionable employment. Salary (including expatriation pay) payable in local currency equivalent at present Government rate of exchange to £742 rising to £1,652 a year. Cost of living allowance equivalent to between £336 and £707 a year according to salary and dependents. Commencing salary according to age and experience. Free passages. Liberal leave on full salary. Candidates should be Chartered or Incorporated Accountants or Associate Members of the Institute of Transport or hold equivalent accounting qualifications. They should have had extensive training and experience in a Railway Accounts Department and must possess a knowledge of budgetary control, Revenue and Expenditure Accounts, Returns and statistics and mechanised Accounting. Apply at once by letter, stating age, full names in block letters, and full particulars of qualifications and experience and mentioning this paper to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting on letter the reference number shown against the post for which application is made. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

JUNIOR DRAUGHTSMAN, under 25, required by East Midlands firm of Railway Permanent Way Engineers. Knowledge of P.W. desirable but not essential. 5-day week, superannuation scheme, canteen. Write stating age, experience, salary required etc., to—BOX 501, *The Railway Gazette*, 33, Tothill Street, London, S.W.1 and contact Employment Exchange.

REQUIRED for the Central Railway of Peru. Railway Stores Assistant (Clerical). Qualifications: Secondary School Education and holding School leaving Certificate, preferably with some previous commercial experience. Age from 23 to 30 years. Knowledge of Spanish desirable. Single man preferred with experience in a Stores Department of a British Railway or an Engineering concern. Apply to —THE PERUVIAN CORPORATION LTD., 144, Leadenhall Street, London, E.C.3.

CHIEF MECHANICAL DESIGN ENGINEER required by Company manufacturing diesel electric locomotives. Applicants should be fully qualified Mechanical Engineers, with wide traction experience and a sound knowledge of the design and manufacture of electric or diesel electric locomotives. A high salary will be paid, commensurate with the responsibility of the post, and a generous Staff Assurance Scheme is in operation. A three year contract will be offered to the successful candidate. Applications, which will be treated in strictest confidence and should give full details of qualifications and previous experience, should be sent to—BOX 494, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

JUNIOR TRAFFIC OFFICIAL with Railway Traffic apprenticeship experience required for the Southern Railway of Peru, age 20/25 years, single, knowledge of Spanish would be an advantage. Apply to the SECRETARY OF THE PERUVIAN CORPORATION LIMITED, 144, Leadenhall Street, London, E.C.3.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25*s*. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

Accordingly, with building and reorganisation schemes still not fully matured, the directors took steps during the year to increase the company's cash by an issue of 400,000 shares at 30s. per share. The meeting agreed to an increase in the authorised share capital of the company, and to payment of a final dividend of 8d. per stock unit, free of income-tax, which, with the interim dividend of 3d. per stock unit, makes a total distribution of 11d. per stock unit for the year.

Ferranti Electronic Computers.—Ferranti Limited has completed the second of a series of electronic computers. The model is to be erected in Toronto University. In spite of the success of the first machine, the "Electronic Brain," which is installed in Manchester University, where it worked 24 hr. a day on a variety of scientific and engineering calculations, the engineers have made detailed improvements to the design which are expected to result in still better performance by the new model.

Dunlop Exhibits at Mechanical Handling Exhibition.—A water jib hose, of the type now being used by railways instead of riveted leather hose for filling locomotive tender tanks, is being shown by the Dunlop Rubber Co. Ltd. on its stand at the Mechanical Handling Exhibition, Olympia, from June 4-14. A rubber hose retains its normal shape when not in action in cold weather and there is no freezing problem as with leather. A miniature rail tank wagon for corrosive liquids will be included in the same display. The wagon has a cut-away section to show the rubber lining protecting the steel container.

Scottish Region Runabout Tickets.—Holiday runabout tickets will be issued in fifteen holiday and tourist districts of the Scottish Region until the late Autumn; the tickets are issued on any day of the week and are available for seven consecutive days, except in the case of the Glasgow and Clyde Coast Pier tickets, which are available from Monday morning to the following Saturday night. Prices range from 15s. to a maximum of 35s. This year the Glasgow and Loch Lomond and Ardlui (*via* Garelochhead) runabout area is extended to include Greenock and Gourock and the ticket is also available for the sailings between Gourock and Craigendoran; and in the Western Highlands, as the result of the combination of two runabout areas in one ticket, the tourist districts bounded by Oban, Ballachulish, Killin, Crianlarich, Fort William, and Mallaig are included in the area covered by ticket No. 7.

Clayton Dewandre Co. Ltd.—The results for 1951 show current assets at £1,101,956 (£997,546 for the preceding year) including stocks £545,752 (£423,243) and cash £194,795 (£153,109), and current liabilities and provisions £459,138 (£455,149). Mr. A. V. Perry, Chairman of the company, has stated that despite an increase of some 10 per cent. in turnover, net profit on trading showed a decrease of about £17,000, due to pension premiums being struck before arriving at profits and to the narrow margin of trading profit. The annual general meeting of the company was held at the Holborn Restaurant, London, W.C.1, on May 8.

South Wales Transport Co. Ltd.—At the annual general meeting of the South Wales Transport Co. Ltd., Mr. W. T. James, Chairman, presiding, said that because of increased fares revenue for the year was substantially higher than in 1950. The application for increased fares had been unavoidable because of continually rising costs, which increased expenditure by £100,000. Total group revenue was £1,160,000. The chairman referred to the severity of the fuel tax; the latest increase would cost the company over £42,000 a year, necessitating further fare increases. The net revenue of the Mumbles Railway increased. Powers were being sought to substitute motorbuses for trolleybuses in Llanelly, where the Llanelly District Traction undertaking was recently acquired by the company from the South Wales Electricity Board.

Extension in Mozambique.—An agency message from Lourenço Marques states that work has begun on a 14-mile extension of the Moamba-Guija line in Mozambique. The line will later be further extended to cross the irrigation dam to be built on the River Limpopo. Ultimately, it will form part of the projected new route between Southern Rhodesia and Lourenço Marques, giving Southern Rhodesia a new outlet to the sea.

Glasgow-Hamilton and Glasgow-Milngavie Sunday Services.—A Sunday afternoon train service has been inaugurated between Glasgow Queen Street, Calderpark (for Glasgow Zoo), and Hamilton, and between Glasgow Queen Street, Partick, and Milngavie. Trains leave Queen Street for Calderpark Halt and Hamilton at 1.45, 2.24, 3.31, 4.26, and each hour thereafter until 7.26 p.m. In the opposite direction there is a service from Calderpark Halt to Queen Street at 2.44, 3.44, 4.44, 5.54, 6.44, 7.44 and 8.24 p.m.; trains start from Hamilton 14 min. earlier. For Milngavie trains leave Queen Street at 2 p.m. and at each hour thereafter until 8 p.m. (Partick 8 min. later), returning from Milngavie at 3.5, 4, 5, 6, 7, 8 and 9.15 p.m.

Manila Railroad Plans.—A recommendation to sell the Manila Hotel and surplus real estate holdings of the Manila Railroad Company to meet the company's indebtedness of about 40,000,000 pesos to foreign bondholders has been forwarded to the President of the Philippine Republic by

the Office of Economic Co-ordination. The recommendation originated from the Acting General Manager of the railway, who wishes to convert these properties into cash to settle the railway's foreign bonds, whose annual interest charges (accumulating but unpaid) are a serious burden on finances. Service on its dollar bonds held by British bondholders has been in default for more than 10 years. though the company has been up to date in meeting its obligations to its American bondholders.

Bury-Holcombe Brook Passenger Service Withdrawal.—The London Midland Region announces that the passenger train service on the Bury Bolton Street to Holcombe Brook line has been permanently withdrawn on and from Monday May 5. Woodhill Road, Brandlesholm Road, and Sunny Wood Stations are closed for passengers. Woolfold, Tottington, Greenmount, and Holcombe Brook Stations are closed for passengers, parcels, and passenger train merchandise. On and from the same date West Leigh & Bedford, and Hucknall Byron goods depots have been closed except for private sidings traffic.

Vulcan Foundry Limited.—Profit for the year to December 31, 1951, after charging £196,206 (£206,378) for taxation, and crediting £18,509 (£14,307) in respect of a dividend from a subsidiary company, was £145,998 (£151,984). After deducting £10,000 (as in 1950) transferred to reserve for pensions; £10,000 (£15,000) transferred to provision for employees' welfare; £80,000 (same) transferred to general reserve, and £2,625 (£2,750) for the dividend on the 5 per cent. cumulative preference stock for the year to December 31, 1951; and adding £58,604 (£54,301) brought forward, there is an available balance of £101,977 (£98,535). The directors recommend a dividend of 7 per cent. and a bonus of 2 per cent. on the ordinary stock (both less income tax at 9s. 6d.), which together will absorb net £62,046 (£58,604).

British Aluminium Co. Ltd.—In his speech at the annual general meeting of the British Aluminium Co. Ltd., the Chairman, Mr. W. R. Cooper, referred to the recent perfection of satisfactory techniques for assembling large aluminium alloy structures by welding. There was, he said, every reason to believe that welding of aluminium structures, first of all in marine applications, but later in bridge, railways and general engineering, would prove as big an advance in technique as it did in the case of steel. The total consolidated income for the year was £3,445,871, an increase of £1,254,375 over the previous year. This increase was derived chiefly from the company's fabricating plants and was due mainly to effective planning of output at the rolling mills, increased use of the company's new installations at Falkirk, and the conversion into secondary alloys of scrap metal stocks purchased some time ago at low prices.

Forthcoming Meetings

June 4 (*Wed.*) to 10 (*Tues.*).—International Mechanical Engineering Congress in Stockholm.

June 7 (*Sat.*).—Railway Students' Association. Tour of London Transport tramway routes.

June 10 (*Tues.*). — Institution of Civil Engineers, Great George Street, S.W.1, at 5.30 p.m. Annual General Meeting.

Railway Stock Market

Uncertainty has continued in stock markets, where sentiment was governed mainly by a reaction in the £ which receded to 2·79 dollars in New York at one time and led to revived talk of a possible further increase in the bank rate. British Funds rallied strongly on Monday at one time, but later, owing to the further decline the value of the £, only a small part of the rally was held, and markets have remained unsettled at the time of writing.

Industrial shares continued to move fairly closely with British Funds and were unresponsive to the good financial results which continue to be announced for the past year. The cautious attitude by buyers is due partly to the uncertainty which persists in regard to E.P.L. and a general tendency to wait until the Finance Bill has become law. Stockbrokers find that because E.P.L. is so complicated a measure, it is difficult to assess the position of many companies in regard to this new tax. In the City it is being urged that companies should as soon as possible issue estimates of their E.P.L. position for the information of shareholders. It is being contended that markets generally are unlikely to rally for the time being until there is a recovery in British Funds; and the latter may fluctuate a good deal while sentiment is affected by uncertainty regarding the bank rate.

Should uncertainty in markets continue, it would not be surprising if foreign rails and other overseas securities tend to attract more attention. At the present time, however, there are few buyers about and prices are moving narrowly. Antofagasta preference has come back to 54, and the ordinary to 11¼, while absence of news from Cuba of any fresh "take over" moves has led to selling of United of Havana stocks and the 5 per cent. debentures receded further to 13¾. Manila debentures remained fairly active with the "A" at 77 and the preference shares 8s. 9d. Leopoldina ordinary and preference have been firm at 11⅛ and 28¼ respectively in the belief that the total "pay-out" will exceed current market prices. A first payment is expected later in the year, but it may be some while before the final payment is made.

Brazil Railway bonds have strengthened to 5¾. Nitrate Rails shares receded to 22s., Taltal shares were 15s. 6d. and San Paulo 10s. units again changed hands around 10s. Leopoldina Terminal debentures kept at 21, and the ordinary shares were again around 9d. Mexican Central "A" debentures turned easier at 70½, and Canadian Pacifics at $65 failed to keep best prices, while the preference stock was 63½ and the 4 per cent. debentures 80xd. Bolivar "C" debentures marked 47½. There was again a fair amount of attention given to Dorada ordinary stock which changed hands around 58. Chilian Northern 5 per cent. debentures marked 31 and Guayaquil & Quito 5 per cent. bonds 30. Paraguay Central 6 per cent. debentures were 20, while United Yucatan 5 per cent. bonds have also been dealt in around 20, and International of Central America 5 per cent. bonds showed business at 127½.

There was only moderate business passing in road transport shares. Yields in many cases are attractive, but buyers are cautious, although the market view is that, despite rising costs, there is a reasonable prospect of dividends being maintained. West Riding were 30s., at which there is a yield of over 9½ per cent., while Lancashire Transport at 38s. yield 11½ per cent. and Southdown at 75s. 6d., 6½ per cent.

Engineering shares have been fairly steady. It is realised that E.P.L. will leave little scope for higher dividends, but on the other hand, the market believes that rearmament and allied work means that in the majority of cases dividends should be maintained. Guest Keen have strengthened a little to 48s. 9d. at the time of writing. Renold & Coventry Chain were 39s. 6d. and Cammell Laird 5s. shares 11s. 1½d. Vickers have been easier at 41s. 6d. following last week's annual meeting which made it clear that although Vickers wishes to be able to buy back its important English Steel interests, the decision must depend on terms of the proposed denationalisation of steel when they are announced in due course.

Beyer Peacock were 28s. 6d., Hurst Nelson 49s., Birmingham Carriage 31s. 10½d. and North British Locomotive 14s. 3d. while T. W. Ward were 69s. 6d. Gloucester Wagon 10s. shares were 11s., Wagon Repairs 5s. shares 11s. 3d. and Charles Roberts 5s. shares 20s 6d. Vulcan Foundry kept at 21s. 3d. North Central Wagons 4s. paid shares were 13s. and Central Wagons 80s. 9d.

Traffic Table of Overseas and Foreign Railways

	Railway	Miles open	Week ended	Traffics for week: Total this year	Traffics for week: Inc. or dec. compared with 1949/50	No. of week	Aggregate traffics to date: Total 1950/51	Aggregate traffics to date: Increase or decrease
				£	£		£	£
South & Cen. America	Antofagasta ...	811	16.5.52	166,570	+ 33,390	20	3,076,540	+ 918 850
	Costa Rica ...	281	Mar., 1952	c1,291,442	+ c828.700	39	c11,423.709	+ c2,585.228
	Dorada	70	Mar., 1952	32,729	— 1,506	13	102,429	— 5 679
	Inter. Ctl. Amer....	794	Mar., 1952	$1,168,652	— $35,654	13	$3,669,159	— $83.950
	Paraguay Cent. ...	274	28.12.51	G289,547	+ G102,688	26	G8.823,911	+ G3.556.978
	Peru Corp. ..	1,050	Apr., 1952	$8,694,000	+ $968,000	44	$83,332.000	+ $6,935.000
	" (Bolivian Section)	66	Apr., 1952	Bs.16,397,000	+ Bs.361,000	44	Bs.161,744,000	+ Bs.35,241,000
	Salvador	100	Feb., 1952	c170,000	— c74,000	35	c1,382.000	+ c55 000
	Taltal	147	Apr., 1952	$2,267,000	+ $342,000	44	$22,160,000	+ $5,547,000
Canada	Canadian National†	23,473	Mar., 1952	19,412,000	+ 1,858,000	13	53,914,000	+ 6.274,000
	Canadian Pacific† ...	17,037	Mar., 1952	12,636,000	+ 1,134,000	13	35,945,000	+ 3,209.000
Various	Barsi Light* ...	167	Apr., 1952	37.260	— 2.970	4	37.260	— 2 970
	Gold Coast ...	536	Mar., 1952	321.377	+ 34,061	52	3,475.842	+ 335,178
	Mid. of W.Australia	277	Mar., 1952	52 253	+ 11,130	39	522 599	+ 165 102
	South Africa ...	13,398	26.4.52	2,037,856	+ 169.338	4	7,398,439	+ 385.987
	Victoria	4,744	Jan., 1952	2,265,953	+ 274,972	30	—	—

* Receipts are calculated at 1s. 6d. to the rupee † Calculated at $3 to £1